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AN EVEN HUNDRED MILLION AMERICANS.

A GREAT deal has been written lately about the possibilities of our foreign trade. This is a timely subject and one of extreme importance, for our foreign trade should certainly receive a great impetus from present conditions abroad. In fact some financial prophets predict that the present year will see a balance of trade in our favor of $1,000,000,000. But it might be remarked that the home market is also constantly and rapidly increasing.

The last census, that of 1910, gave the United States a population of 91,972,266, and the government experts, basing their figures on the increase shown by that census over the census of ten years before, have been trying to estimate at just what date the population would cross the 100,000,000 mark. One statistician connected with the Census Bureau believes that the mark was crossed late in January; another places the date early in April. Taking an even course between the two—which is a wise procedure when experts disagree—it may safely be stated that the 100,000,000 mark will be reached about the first of March, or just about the time this publication is received by the greater number of its readers.

This population is equal to the combined population of the United Kingdom and France with Denmark, Norway, Sweden and Portugal thrown in; and what is more to the point as far as rubber goods are concerned, these 100,000,000 Americans have a greater buying power, even in normal times, than the combined population of the six countries named together with all the other people in Europe.

THE REFORM WAVE REACHES THE TIRE.

IN the past the tire has been the object of considerable objurgation on the part of the car owner, and perhaps with some little reason. It was not so much that he objected to the price he had to pay as it was the fact that when he mentioned, with some little show of pride, that he had got a 40 per cent. discount on his tire from the little dealer down the street he found that his neighbor had secured a 45 per cent. discount on the same tire from the same dealer. These experiences are always rather humiliating.

But the last month has seen the introduction of a much-needed reform (mentioned in more detail elsewhere in this issue) in the selling of tires. Now, when the consumer goes into the tire market to get a new casing he will no longer be confronted with a highly inflated list—which will be generously deflated for his particular benefit—but he may carry with him the net lists issued by the manufacturers and know in advance just what he should pay for his tire, with the added comforting assurance that there will be no subsequent discovery that his neighbors have paid less. This is a most salutary change and will help the tire to assume the distinguished place in public esteem to which its great usefulness entitles it.

Another development of the past month gladly welcomed by the car owner was the reduction, amounting on an average to about 20 per cent., in the retail price of the tires most in demand. On comparing present prices with those that ruled four and five years ago, during the period of high crude rubber costs, it will be found that tires now offered at about $19 then cost the consumer $45 to $50. In other words, there has been a reduction during the last

half decade of about 60 per cent. But this reduction is warranted by the increased efficiency of manufacturing plants, the extraordinary fall in the price of crude rubber from $2.50 and over to the neighborhood of 60 cents per pound and the exceptionally low price at which cotton is now selling.

With good, serviceable cars selling for a very few hundred dollars, and with tire maintenance, under ordinary conditons of travel and with reasonable use, amounting, let us say, to not over $100 a year, the happy condition has arrived where the plain citizen may become a car owner without curtailing his reasonable expenditures for food and shelter or bringing the sources of his income under suspicion.

COMBINATION FOR EXTENSION OF TRADE.

IN his interesting forty-five minute dissertation before the Chamber of Commerce of the United States early in February, President Wilson, after discussing many and varied matters, addressed himself briefly to one subject which is of vast importance to all the manufacturers of the United States, including those who manufacture rubber goods. He spoke of the great disadvantage under which American exporters are placed in seeking foreign markets in the restrictions which prevent them from combining forces, as compared with foreign exporters, who are not only encouraged but are assisted by their respective governments in cooperating to secure foreign trade.

He appeared to assume that the anti-trust laws made it illegal for any sort of combination of commercial interests whether that combination was in restraint of trade or for the purpose of extending trade. He pointed to the obvious fact that under these conditions the great manufacturing corporations which are able to extend their organization into every quarter of the globe can thus secure practically a monopoly of the export business, as the smaller manufacturer is in no position to maintain such an extended organization. He said: "The question arises, therefore, how are the smaller merchants, how are the younger and weaker corporations, going to get a foothold as against the combinations which are permitted and even encouraged by foreign governments in this very field of competition? I want to be shown how that combination can be made and conducted in a way which won't close it against the use of everybody who wants to use it." Mr. Wilson stated that he did not expect the members present to offer a feasible working plan off-hand, but he promised if any legal and equitable form of combination could be devised for entering foreign markets he would favor it.

In this address he exposed the chief weakness in our foreign trade situation. Assuming that the President is right in his construction of the Sherman law, namely, that it forbids all combination irrespective of its purpose, it is obvious that the small manufacturer and importer must find the foreign field if not closed to them at least a difficult and expensive one to enter. Under these conditions it would seem quite urgent that the legal branch of the Executive Department should give a definite interpretation of the anti-trust laws which will ensure American commercial interests immunity if they combine for foreign trade, or else, if this is not possible, that Congress should so amend the anti-trust laws that their restrictions should apply only to those combinations which are distinctly in restraint of trade and not to those whose purpose is general trade expansion.

WAR'S PROMOTION OF LIFE-SAVING DEVICES.

WAR'S first business is slaughter; the greater the slaughter the more successful the war. But over against this truism lies the fact, as a sort of inverted corollary, that war's second concern is the preservation of life. Each combatant seeks to destroy as many of the enemy as possible while saving his own men. So, while in time of war many active brains are engaged in devising new agencies of destruction, an equal number are absorbed in the invention of means to nullify these new methods of attack.

For instance, of all the recent devices for destroying life at sea, none is so appalling in its work as the submarine. It comes upon its victim unseen, it strikes from the dark and there is no hope of escape. But since the beginning of the present great conflict, with its swift development of submarine warfare, there has been a constant effort to mitigate its work in the destruction of human life. The British Admiralty early in the war arranged to have the officers and men of its fleet equipped with a swimming collar—which was described and illustrated in the January number of this publication—and everyone on board in time of possible attack is compelled to have this collar about his neck during waking hours and inflated and at his side during sleep.

But the Germans have not lagged behind, for when

the cruiser "Blücher" was sunk in the North Sea battle in January the members of the crew leaped into the water and remained floating there until picked up by the English boats, when it was discovered that the Germans were equipped with what might be called an inflated rubber chest protector attached at the waist to a cork belt and fastened on the shoulder.

To a very large extent these simple and inexpensive rubber devices worn by the members of the English and German navies are able, if not to nullify, at least to mitigate the deadly work of the sub-sea monsters.

THE RUBBER-TIRED BUS DISTURBS THE TROLLEY.

AN official of a Los Angeles street railway company recently stated to a committee of the California legislature that it would only be a short time before the auto-bus would drive the trolley car out of business. He is not alone in entertaining this apprehension. Within a few days the mayor of Seattle has opposed a movement for municipal ownership of the street car lines on the ground that the auto-bus would soon supersede them, and the complaint comes from a number of cities, particularly in the West, that street car traffic, and consequently street car profits, have been very much reduced since the advent of the big motor-driven stages.

It is hardly likely that the motor-bus will entirely displace the trolley, for in some lines of service the trolley has great advantages, especially in inter-urban service, where the continuous runs cover a distance of several miles, and also in the smaller cities where there is no elevated road nor subway, and where the morning and night flow of the population to work and home must be taken care of quickly and in large volume. But the motor-bus undoubtedly will prove a disturbing rival to the trolley in solving certain parts of the city transportation problem. It has this great advantage that it requires neither track nor large and extensive power plant. It also can cover many sections of the city where the trolley could not be introduced profitably. It is also very convenient for the shopper, who can take it at the nearest corner and alight at the store door. And it serves the sightseer pleasantly in taking him through attractive streets where the trolley has not been permitted to enter.

And the auto-bus, with its great weight of 3 to 4 tons and its capacity for 35 to 45 passengers, representing an additional weight of 2 to 3 tons, has been rendered possible, of course, only by reason of the rubber tire.

BREATHING GOOD AIR AMID DEADLY FUMES.

THE January number of this publication contained an illustrated article on the wonderful deep-sea salvage work recently carried on at the mouth of the St. Lawrence in connection with the ill-fated "Empress of Ireland," this work being conducted at a depth of 160 feet below the surface. The apparatus used was described in detail and the fact brought out that rubber formed not only a very considerable part of its construction but was absolutely indispensable to its successful operation. Several pages of this issue are devoted to a description of the safety equipment most generally used in working in dense smoke or in noxious fumes. This equipment, though so compact and light as to be worn without discomfort across the chest, enables the wearer to continue respiration comfortably and without any subsequent ill effects, in the deadliest atmosphere. Like the diver's outfit, this equipment also depends for its efficacy on its rubber parts.

The recent accident in the New York subway, in which several hundred passengers were rendered unconscious by the fumes of burning insulation, and where one death ensued, not only has awakened the New York fire department to the urgent necessity of adding to its resources an adequate equipment for this sort of rescue work, but has called attention anew to the vital need of smoke helmets in some form wherever there is a possibility of the generation of suffocating gases in places not freely open to the air.

OUR GERMAN CONTEMPORARY'S CREDITABLE RECORD.

IN a paragraph which appeared in the January issue of this publication regarding the effect of the war on our European contemporaries it was remarked that the publication of the "Gummi-Zeitung" was interrupted only for the four August issues. It is a pleasure to state that there was in reality no interruption whatever and that, notwithstanding the disturbed conditions of the empire, this German publication, which entered the field of rubber journalism twenty-nine years ago, was able to adhere to its regular schedule. The non-arrival of the August numbers, which have since come to hand, was not attributable to any suspension of regular publication, but simply, as subsequently developed, to the temporary derangement of the German postal facilities.

The First Month of the Embargo Suspension.

WHEN it was announced, on January 8, that the British Government would suspend its embargo on the shipment of rubber from London and other British ports to New York, under guarantees from American importers and manufacturers that none of this rubber, either in crude or manufactured form, should reach the enemies of the Allies, it was at once perceived that here was a problem involving a good deal of detail in its effective operation. The matter of arranging all this detail so as to release London rubber to American purchasers as rapidly as possible has received unremitting attention during the last month and is progressing very satisfactorily.

Sir Richard Crawford, connected with the British Embassy at Washington as commercial attaché for the special purpose of adjusting any difficulties that might arise under the British embargo on rubber, wool and other articles, arrived late in January. The Embargo Committee of the Rubber Club immediately got into communication with him, and as a result he decided that the Rubber Club would be the best agency for doing the detailed work necessary in distributing English rubber to American users. The secretary of the club was able, therefore, on February 13, to send an announcement to the trade containing the following paragraph:

"Through Sir Richard Crawford, the official representative of the British Government, the rubber trade of the United States is told that the Rubber Club of America has been appointed trustee to guard the interests of the British Empire in enforcing the agreement with reference to the import and export of crude rubber and the export of manufactured rubber goods. Frankly and fairly he puts us on honor to carry out the requirements of his Government."

A RUBBER CONTROL COMMITTEE APPOINTED.

In order to take up this new work, with all the responsibilities that it entailed, the Executive Committee of the Rubber Club convened and appointed a special committee to be known as the "Rubber Control Committee," which should have full charge of this entire matter. The membership of the committee is as follows: Charles T. Wilson, of Charles T. Wilson & Co., Inc., chairman; George B. Hodgman, of the Hodgman Rubber Co., and president of the Rubber Club of America; William E. Bruyn, of L. Littlejohn & Co., and president of the Rubber Trade Association of New York; Bertram G. Work, of The B. F. Goodrich Co.; Henry Spadone, of The Gutta Percha & Rubber Manufacturing Co.; H. Stuart Hotchkiss, of the United States Rubber Co., and William J. Kelley, with Arnold & Zeiss.

THE CLUB MOVES INTO LARGER OFFICES.

In this same communication the secretary announced the removal of the club's offices from 17 Madison avenue to the Whitehall building, 17 Battery Place, where much larger and more commodious quarters, with accommodations for the additional clerical force needed, were secured, in the immediate vicinity of the rubber importing district. As it was necessary, in order that this new Control Committee could do its work in the most satisfactory way, that it should have the general approval of the trade, the secretary concluded the communication with the following appeal:

"The honor and integrity of the rubber industry of the United States is involved. If any manufacturer, importer, dealer or broker does not wish to be bound by the restrictions imposed by the British Government, he should, in fairness and justice to himself and the whole trade, declare himself to the Rubber Club of America, who in turn may disclaim any responsibility for his actions. Anyone in the trade not heard from will be considered as in full accord with and a partner to the obligations assumed by the Rubber Club of America and the Rubber Trade Association of New York.

"The members of the Rubber Control Committee have only accepted the responsibilities of the position upon the understanding that they will have a free hand and enjoy the full confidence of the various members of the trade. We bespeak for them the hearty co-operation of everybody interested."

In the meantime, in order that the members of the trade might keep thoroughly in mind the conditions under which they could secure shipments of rubber from London, the Embargo Committee sent, on January 30, to the members of the Rubber Club of America and the Rubber Trade Association of New York a communication giving a resumé of all the conditions contained in the guarantees required by the British Government, which were printed in full on page 249 of the February issue of this publication, and consequently need not be repeated here. One point, however, was mentioned in this communication which was not covered in the original guarantee forms. It referred to plantation rubber from the Dutch East Indies. On this subject the committee said: "We would strongly advise, pending further information, that Dutch rubber be regarded exactly the same as if it was plantation rubber. Otherwise misunderstandings would almost surely arise and the shipper would perhaps suffer cancellation of his permits pending investigation."

A VERY REGRETTABLE INCIDENT.

A very unfortunate incident occurred on February 15, when it was discovered, by means of an X-ray expert connected with the British Secret Service, that some 168 bales of cotton waste delivered at pier 59 North River for shipment on the "Cretic" to Mediterranean ports, contained small rolls of white sheet rubber. The name of the shipper as it appeared on the manifest was A. B. Newman, of New York. However, the alertness and energy shown by the Control Committee of the Rubber Club in starting at once upon a thorough investigation of this matter, convinced the British officials that the club would do everything in its power to maintain the reputation of the American rubber trade for honesty and square dealing with the British Government.

FORMS TO BE USED IN THE SALE OF MANUFACTURED GOODS.

As a good many members of the trade were somewhat puzzled when selling goods to domestic purchasers, as to what procedure they should take to prevent these purchasers from shipping the goods contrary to the guarantees, the Rubber Control Committee sent a communication, on February 19, to members of the club, giving a form of preliminary letter which, with possibly a few changes, every manufacturer could send out to his customers, and also a form which could be used, either in the shape of a rubber stamp or a printed slip, to be attached to acknowledgments of orders and invoices. This has undoubtedly proved of great assistance to manufacturers who wished to live up to their obligations religiously but were in a quandary as to just how this could be done after their goods left their possession.

Another question which naturally arose under the existing conditions concerned the proper method of procedure in making a certification of guarantees. To cover this situation the Rubber Control Committee sent to the whole rubber trade of the country, including importers, dealers, brokers and manufacturers, a circular giving the regulations for fulfiling guarantees, which, because of its importance to the trade, is given on the following page in full:

REGULATIONS FOR FULFILLING GUARANTEES.

TO the Rubber Trade of the United States, including Importers, Dealers, Brokers and Manufacturers:

This is to inform you that the Rubber Control Committee has passed resolutions covering the procedure for the certification of guarantees to the British Consular office for the proof of delivery of rubber and necessary formalities in case of rejection.

I—PROCEDURE FOR CERTIFICATION OF GUARANTEES.

Manufacturers are to sign guarantees furnished them in blank. The signature must be accompanied by the corporation seal in the case of a corporation, or signed by a partner in the case of a co-partnership.

If manufacturers so desire, they may lodge such guarantees signed in blank with the importers, or they may lodge them with The Rubber Club of America, Inc., as trustee.

In case guarantees are filed with The Rubber Club of America, Inc., the secretary shall only give such guarantees to importers for their signature upon importers furnishing him with typewritten particulars of marks, numbers, quantities and grades of consignments, together with the names of the steamships by which they arrived, which information shall be placed upon the guarantees before they are released for the importer's signature.

II—PROOF OF DELIVERY OF RUBBER.

Each shipper of rubber to a manufacturer or dealer, for the purpose of showing proof of shipment, shall lodge with the secretary of The Rubber Club of America, Inc., within a reasonable time (the limit being ten days) a signed copy of the bill of lading from the transportation company, or a signed copy of the delivery receipt from those receiving the rubber, with the gross weight indicated thereon.

The secretary is also to send to each manufacturer a form describing the goods covered by guarantee certified to by him. To said form a receipt is attached, which is to be signed by the manufacturer as soon as the rubber is received, and returned to the secretary. In this way, the committee expects to keep check of the arrivals in the port of New York and verify actual deliveries to manufacturers.

III—CHARGES FOR HANDLING.

Two cents per case or package shall be charged by The Rubber Club of America, Inc., to cover the expenses incurred in handling the importations of Plantation rubber, in accordance with the requirements of the British Government and the regulations passed by the Rubber Control Committee.

Said charges became operative with the arrivals on steamer "Menominee." They are to be collected from the importers, who shall in turn collect from the manufacturers.

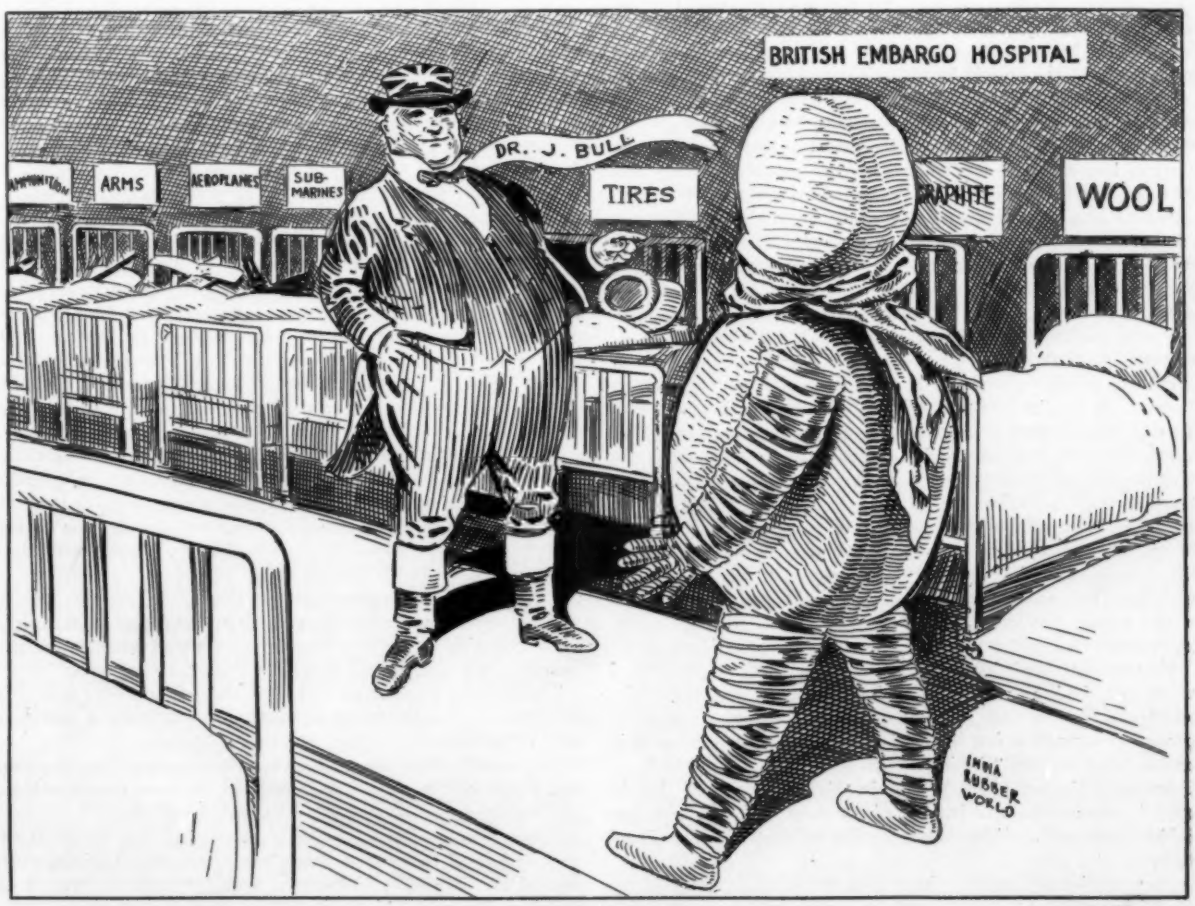
IV—REJECTED RUBBER: NOTICE TO SECRETARY.

The attention of manufacturers is called to the fact that they are accountable for rubber released for their account, and that in case of rejection of rubber in whole or in part the manufacturers must immediately notify the secretary of The Rubber Club of America, Inc.

In such cases, the secretary must promptly receive from the seller of the rubber either a new guarantee from a new customer for the delivery of the rejected rubber to them, or the seller must put the parcel in trust (pending the resale of same) with The Rubber Club of America, Inc.

V—HOURS OF CERTIFICATION.

The hours during which the secretary of The Rubber Club of America, Inc., is prepared to receive information from importers as to particulars of shipments, where guarantees are held in trust by him for manufacturers, or in which their guaranteees can be certified, are from 10 A. M. to 4 P. M. on week days and 10 A. M. to 12 A. M. on Saturdays.



STILL UNDER OBSERVATION.

DR. J. BULL—YOU ARE MUCH BETTER, MR. RUBBER, POSSIBLY WELL, BUT BE CAUTIOUS, A RELAPSE WOULD BE SERIOUS.

AN INTERESTING INTERVIEW WITH SIR RICHARD CRAWFORD.

SIR RICHARD CRAWFORD, the special commissioner attached to the British Embassy at Washington and appointed by his government especially to supervise all matters arising under the rubber and other embargoes, arrived in New York from Washington on February 24 to devote two or three days to his duties in connection with rubber and other importations at that port. He was selected for this very responsible work because of his successful career in the diplomatic work connected with England's foreign commercial relations.

Notwithstanding the amount of work awaiting him on his arrival at New York, Sir Richard was kind enough to accord a representative of THE INDIA RUBBER WORLD an interview. He expressed himself as thoroughly satisfied with the manner in which the Rubber Club was conducting the various proceedings connected with the distribution of rubber from London to American importers and manufacturers and he was convinced that he had done wisely in arranging that the club should assist the British Consulate in this onerous work.

There were some features, of course, that would improve as the work progressed. One in particular he spoke of in some detail, namely, the unfortunate delays in clearing the docks of rubber under the present system, which permits an importer to take only such rubber as he has sold and for which he has the manufacturer's guarantee. At present, any unsold part of a shipment consigned to the importer must remain on the docks, as there are no facilities for its warehousing. Sir Richard's suggestion to the trade is that all these importations should be financed through one bank, to be approved by the British Government and which would be held responsible by that Government for the retention of all rubber released under the proper guarantees. Should this system be adopted and all rubber be financed through one banking institution with approved London connections—like the Morgan house, for instance—the importer would have any unsold part of his consignment warehoused by the bank, to be released to him as subsequent sale might be made. This would relieve the docks from congestion, expedite the discharge of cargoes and save a great deal of unnecessary routine work. He was fully aware of the fact that such a change in financing importations of rubber would meet with considerable opposition, but on the whole he believed that it would be vastly to the advantage of the trade.

When a certain paragraph in the communication sent out on January 30 by the secretary of the Club to its firm members, namely, "Sir Francis Hopwood made it particularly clear to Mr. Work that the American industry could feel secure under the present plan unless numerous violations occurred," was called to Sir Richard's attention and he was asked how numerous the British Government would permit these violations to become before taking any official notice of them, he made it clear at once that the British Government would not wait for "numerous" violations but would take note of any violations whatever and would expect the rubber trade of America to live up to the agreements that had been made, fairly and fully.

He was convinced that this was exactly what the trade wished to do and cited with satisfaction the promptness and vigor with which the Rubber Club took up the attempt by an irresponsible person to smuggle a few hundred pounds of rubber concealed in cotton bales on the "Cretic" which sailed about the middle of February. The action of the club in this matter proved that its officials were extremely jealous of the honor of the American rubber trade and sensitive to any imputation that might be placed upon it.

As a number of inquiries have been made by members of the American trade as to what would be expected of them regarding shipments to Porto Rico, the Philippines and the Hawaiian Islands, Sir Richard was asked as to his interpretation of this matter. He replied that the stipulations contained in the guarantees fully covered this point and made it clear that, after manufacturers had signed the guarantees, they would be expected to report all such shipments to the British Consul at the port of shipment, just as in the case of shipments to non-European neutral countries not under the American flag.

Another question—rather more hypothetical in its character than of immediate practical interest—was put to Sir Richard, namely: In case the Germans should convert their "War Zone" into an effective blockade and commerce between London and New York should be interrupted, would the British Government be willing to have rubber shipped direct from the East to American ports? Of course he did not admit that any such contingency could arise, but he was free to say that should anything interrupt commerce between London and New York the British Government would undoubtedly sanction the shipment of rubber from the East to American ports either direct or by transshipment at Gibraltar.

Sir Richard expects to remain in this country for some months, passing the greater part of his time, naturally, in Washington, but running over to New York every ten days or so to take up whatever questions regarding embargo matters may need his attention.

PROPOSED CONSTITUTION AND BY-LAWS OF THE RUBBER CLUB OF AMERICA, INC.

THE recent important work done by the Rubber Club of America relating to the embargo on crude rubber has opened the eyes of the trade, and indeed of the club itself, to great possibilities for further usefulness. Now to be prepared for whatever situation may develop the Board of Directors and the Executive Committee, at a recent meeting, decided to change the constitution of the club, to give them adequate power.

The club at present operates under a Massachusetts charter, which practically allows of only social activities. It has been decided, therefore, to dissolve the Rubber Club of America and surrender the Massachusetts charter. At the same time The Rubber Club of America, Inc., will be formed under Connecticut laws. To do this it is necessary to secure the written consent of a majority of the members. By the time this reaches our readers the blanks for the consent both to this dissolution and the creation of the new corporation will be placed before the membership of the club, together with a copy of the new constitution and by-laws.

The whole plan has been worked out by the Executive Committee and the Board of Directors under expert advice, and the adoption of the new constitution will undoubtedly make the club much stronger and certainly of very much more value to the rubber trade of the United States and Canada. The salient points of the new constitution follow:

Under the new arrangement the Board of Directors, which will be nominated by the Nominating Committee, will consist of the president, the two vice-presidents and nine other firm members, with the power to add to their number.

The Board of Directors will elect the officers, who will be a president, a vice-president, a second vice-president, a secretary and a treasurer.

The Board of Directors also appoints the Executive Committee, which will consist of the president, the two vice-presidents, the last ex-president and two firm representatives.

Ex-presidents of the association, as long as they remain members of it, will be *ex officio* members of the Board of Directors and of the Executive Committee, with the right to vote at all meetings, but not to be counted on a question of quorum.

Some of the more important articles are quoted below in full:

ARTICLE I.

Name.

The name of this association shall be THE RUBBER CLUB OF AMERICA, INC.

ARTICLE II.

Object.

The Rubber Club of America, Inc., is established to promote in all lawful ways the commercial interests of its members and to secure the advantages to be obtained by mutual co-operation; to acquire and disseminate information concerning trade conditions at home and abroad, credits and other matters of interest; to promote social intercourse among those connected with the rubber industry and commerce, and in general for the promotion of the welfare of the rubber industry.

ARTICLE III.

Membership.

Section 1. The membership shall consist of "Firm," "Associate" and "Honorary," election to be by vote of the Executive Committee.

Section 2. (a) Any firm, corporation or individual engaged in the rubber industry and commerce in the United States of America or in the Dominion of Canada may become a "Firm Member" of this association. Each "Firm Member" shall be represented by an officer of the corporation or a member of the firm, who shall be designated and registered as the "Firm Representative" except as provided in Article X hereof; no one shall be permitted to vote at the annual meeting or at any special meetings of the association except the registered Firm Representative, but this power may be delegated to some one in the employ of or acting for the "Firm Member" holding a written proxy. Only officers of a corporation or partners of a co-partnership holding "Firm Membership" are eligible to election as President, First Vice-President, Second Vice-President and Director. "Firm Members" shall alone shall have a pecuniary interest in the assets and property of the association. Each "Firm Member" shall be entitled to cast one vote.

(b) Any person connected with a corporation or firm engaged in the rubber industry and commerce in the United States of America or the Dominion of Canada shall be eligible to Associate Membership in this association. Associate members are admitted to the social privileges of the club, but shall have no voting power except with respect to the social activities of the association.

(c) Honorary Membership shall be at the discretion of the Executive Committee, but such membership shall carry no voting power.

ARTICLE IX.

Organization of Divisions.

Section 1. "Firm Members" of this organization may form themselves into divisions according to the particular branch of the rubber business in which they are respectively engaged for the purpose of acting upon such matters as pertain to their business. "Firm Members" may designate some person connected with their concern to represent them in division meetings and activities, who need not be the firm representative, but who must have from the firm member proper authority to act on its behalf.

Section 2. Each division may adopt its own rules and regulations, provided such are not inconsistent with the Constitution and By-Laws of this association. Each division may appoint its own Chairman and Vice-Chairman, but the Secretary and Treasurer of each division shall be the Secretary and Treasurer of this association.

Section 3. Special work undertaken for the exclusive benefit of a division shall be at the expense of such division. The amounts necessary to meet the cost of such special work shall be provided by each division in such manner as it may deem advisable, and such funds shall be placed by the Treasurer of the association in a "special account" to be drawn against, but only on the written approval of the Chairman or Vice-Chairman of such division.

ARTICLE XI.

Entrance Fees and Annual Dues.

Section 1. Entrance Fee. Upon the election of every member the Secretary shall notify him thereof and furnish him with a copy of the Constitution and By-Laws. Every firm member thus elected (Associate and Honorary being exempt) must within thirty days after receipt of such notice of his election pay to the Treasurer an entrance fee of twenty-five ($25) dollars.

Section 2. Annual Dues. The annual dues for "Firm Members" shall be fifty ($50) dollars per annum, and for "Associate Members" five ($5) dollars per annum, payable in advance. All dues for members elected prior to the adoption of these By-Laws shall be payable on April 1 in each year, and those who are elected subsequent to the adoption of these By-Laws shall pay their dues on the 1st of the month following their election, and annually thereafter upon the 1st day of the month in which their initial payment became due. Members who fail to pay their entrance fees, annual dues or other indebtedness within thirty days after the same become due shall be notified by the Secretary, and if payment is not made within the next succeeding thirty days shall be reported to the Executive Committee as in arrears, and may in the discretion of the Executive Committee be dropped from the membership rolls.

THE RUBBER CLUB GAINS MANY FIRM MEMBERS.

THE firm membership of the Rubber Club of America was increased by the addition of forty-three new names during the month of February. The firms together with the firm representatives are given below:

American Wringer Co., 99 Chambers street, New York; A. G. Beardsley, Jr.

Avon Sole Co., Avon, Massachusetts; Raymond E. Drake.

B & R Rubber Co., North Brookfield, Massachusetts; T. G. Richards.

Baumann Rubber Co., New Haven, Connecticut; Morris Baumann.

Bay State Insulated Wire & Cable Co., Hyde Park, Massachusetts; John H. H. McNamee.

Brunswick-Balke-Collender Co., 31 W. 32nd street, New York; Charles P. Miller.

Candee, L., & Co., New Haven, Connecticut; H. Stuart Hotchkiss.

Chipman, R. L., 25 Beaver street, New York. (Changed from active membership.)

Dayton Rubber Manufacturing Co., Dayton, Ohio; John A. MacMillan.

Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario; F. Westren.

General Rubber Co., 1790 Broadway, New York; William F. Bass. (Changed from active membership.)

Habirshaw Wire Co., Yonkers, New York; Richard S. Satterlee.

Henke, Gustave R., 150 Nassau street, New York.

Hamilton Rubber Manufacturing Co., Trenton, New Jersey; W. L. Blodgett.

Hadden & Co., Inc., 212 Fifth avenue, New York; H. F. Hadden, Jr.

Home Rubber Co., Trenton, New Jersey; Charles E. Stokes.

Hydes, Thomas, Trenton, New Jersey.

Indiana Rubber & Insulated Wire Co., Jonesboro, Indiana; R. W. Seiberling.

Kaufman Rubber Co., Limited, Berlin, Ontario; A. R. Kaufman.

Kokomo Rubber Co., Kokomo, Indiana; D. C. Spraker.

Knight Tire & Rubber Co., Canton, Ohio; G. F. Knight.

Lovell Manufacturing Co., Erie, Pa.; B. A. Walker.

Manhattan Rubber Manufacturing Co., Passaic, New Jersey; A. F. Townsend.

Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana; E. A. Saunders.

Mohawk Rubber Co., Akron, Ohio; S. S. Miller.

Miller Rubber Co., Akron, Ohio; Wm. F. Pfeiffer. (Changed from active membership.)

New York Mackintosh Clothing Co., Mamaroneck, New York; Charles H. Place.

Newark Rubber Co., Newark, New Jersey; E. Pierpont Gwillim.

Polack Tyre & Rubber Co., 246 W. 59th street, New York; Hugo Hoffstaedter.

Racine Rubber Co., Racine, Wisconsin; Louis T. Vance.

Rhoades & Co., R. W., proprietors, Rubber Stopple Co.; Long Island City, New York; Richard W. Rhoades.

Rubber Products Co., Barberton, Ohio; E. J. Schutz.

Rumsey & Greutert Co., Inc., 25 Beaver street, New York; Henry J. Greutert.

Rubber Trading Co., 9 Murray street, New York; William T. Baird.

Spalding, A. G., & Bros., 126 Nassau street, New York; Julian W. Curtiss.

St. Mungo Manufacturing Co. of America, Newark, New Jersey; W. W. Mills.

Tayson Rubber Co., Wooster, Ohio; I. C. Emery.

Thermoid Rubber Co., Trenton, New Jersey; Robert J. Stokes.

Van Cleef Bros., 7711 Woodlawn avenue, Chicago, Illinois; Paul Van Cleef.

Victor Rubber Co., Springfield, Ohio; H. H. Durr.
Vulcanized Rubber Co., 251 Fourth avenue, New York; Samuel H. Dodd.
Whitall Tatum Co., 46 Barclay street, New York; H. H. Reddy.
Whitehead Brothers Rubber Co., Trenton, New Jersey; Alfred Whitehead.

THE MECHANICAL RUBBER GOODS MANUFACTURERS MEET.

The first general meeting of the Mechanical Rubber Goods Manufacturers' division of the Rubber Club of America was held Tuesday, February 16, at 33 West Forty-second street. Twenty-six different companies were represented at this meeting.

William T. Cole, of the Fabric Fire Hose Co., was elected permanent chairman of the division, and John J. Voorhees, president of the Voorhees Rubber Manufacturing Co., was elected vice-chairman.

It was voted that the annual meeting of the division should be held on the same day as that of the Rubber Club of America, and that regular quarterly meetings of the division should be held quarterly after the first annual meeting. The following executive committee was appointed: William T. Cole, chairman, Fabric Fire Hose Co.; George E. Hall, Boston Woven Hose & Rubber Co.; C. C. Case, Revere Rubber Co.; Henry Spadone, Gutta Percha & Rubber Manufacturing Co.; C. Edward Murray, Empire Rubber & Tire Co.; J. H. Kelly, Republic Rubber Co.; Howard E. Raymond, The B. F. Goodrich Co.; John J. Voorhees, Voorhees Rubber Manufacturing Co.; George H. Wies, Eureka Fire Hose Manufacturing Co.

RUBBER BOOTS REDUCED IN PRICE.

THE United States Rubber Co. announced its new footwear prices for the coming season on March 1 instead of as hitherto on January 1. There is no change in the price in the shoe lists, but the entire line of boots has been reduced in price on an average of from 4 to 5½ per cent. The net prices of Hip Boots and Short Boots, as they appear in the lists of the Boston Hub-Mark Brand, are given below, together with the prices of January 1, 1914, which were in force up to March 1. There is a corresponding reduction of price in Sporting and Storm King Boots.

	Net Price. Jan. 1, 1914.	Net Price. March 1, 1915.
HIP BOOTS.		
Men's Hip Duck or Warrior	$4.53	$4.28
Men's Hip Duck Trawler	4.89	4.63
Men's Hip Jungle (Duck Vamp)	4.28	4.06
Men's Hip Gum Dull Finish	4.05	3.85
Boys' Hip Gum Dull Finish	3.31	3.14
SHORT BOOTS.		
Men's Short Duck or Warrior	3.24	3.09
Men's Short Duck Trawler	3.60	3.44
Men's Short Jungle (Duck Vamp)	2.94	2.79
Boys' Short Jungle (Duck Vamp)	2.28	2.17
Men's Knee Gum Dull Finish	3.14	2.99
Men's Short Gum Dull Finish	2.75	2.61
Boys' Short Gum Dull Finish	2.14	2.03
Youth's Short Gum Dull Finish	1.60	1.52
Men's Short Pebble Leg Bright Finish	2.75	2.61
Boys' Short Pebble Leg Bright Finish	2.14	2.03
Youths' Short Pebble Leg Bright Finish	1.60	1.52
Women's Short Plain or Pebble Leg	1.64	1.57
Misses' Short Plain or Pebble Leg	1.43	1.35
Children's Short Plain or Pebble Leg	1.18	1.14

THE NEW RUBBER TARIFF IN CANADA.

Canada has recently put a special import tax on all rubber, crude as well as manufactured. There is a preferential tariff rate of 5 per cent. ad valorem and a general tariff rate of 7½ per cent. in addition to the rubber duties which have hitherto been in force. These new rates apply to rubber which was formerly free as well as to that which was dutiable. The prohibition of the export of rubber from Canada still continues.

A DECIDED STIR IN THE TIRE MARKET.

IF January was particularly interesting because of the lifting of the crude rubber embargo, February made its especial claim for attention by the reduction of prices in the tire market and the introduction of a long needed reform in the methods of sale.

The Goodrich company announced on the first day of the month a reduction amounting to about 20 per cent. in the tires most in demand. For instance, the plain tread 34 x 4 was reduced in price from $24.35 to $19.40. In addition to reducing its prices it published a net list to the consumer. This company was followed immediately by practically all the large tire making companies in the United States, the reductions as a rule being about the same as inaugurated by the Goodrich company. The Ajax, Braender, Diamond, Empire and United States announced what was practically a 20 per cent. reduction, while the Firestone, Fisk, Federal, Goodyear, Kelly-Springfield, Lee, Pennsylvania and Republic made public in the press and through their salesmen reductions in some cases over 20 per cent. and in others a little under that figure.

The reason assigned for these reduced prices, following other reductions during the past two years, is the decidedly lower cost of material. Crude rubber is now selling at the lowest point since the rubber industry assumed any importance, and, as everybody knows, there has been a glut of cotton this year, sending the price of that commodity to a low point. To be sure some people have assigned another reason, namely, that the large manufacturers felt that there were too many small competitors crowding into the field and thought it advisable to make the industry somewhat less attractive for these new arrivals, but whether that be so or not, the low cost of crude rubber and of cotton is in itself quite sufficient to account for the new prices at which tires are now being sold.

The reason assigned for publishing the lists of net prices to the consumer lies in the abuse to which the old price lists have been subject, many of these lists being marked up to a high figure so that the retailer could lure his customer by making what appeared to be extraordinary discounts, these discounts amounting in some cases to 40 and even 50 per cent. And even so, the consumer has sometimes found that, despite the liberal—one might say munificent—discount he received, he could have bought the same tire elsewhere at a lower figure. This reform in selling methods was greatly needed. The car owner can now tell exactly what he must pay for any given tire and will not be worried with the suspicion that if he had gone across the street he could have purchased his tire at still lower price.

Some of the small retail dealers are not pleased with the publicity methods of the manufacturers in giving out these new net lists and in stating their reasons for doing so. Some of the dealers think that these statements regarding padded lists are a severe reflection upon their methods, and in this they are quite right; but these methods were certainly open to grave criticism. To be sure, in a reform like this the just and the unjust often suffer together, but, irrespective of the fact that some innocent dealers have had an imputation put upon their methods which they do not deserve, the business of retailing tires as a whole was greatly in need of reform.

The result of these new lists with lowered prices will undoubtedly be a considerable increase in the number of cars purchased, for once the maintenance of a car comes within the comfortable ability of people of moderate means the army of car owners will grow so fast that the present tire capacity of the American mills, great as it is, will be fully utilized.

Immunity from Danger in Smoke and Noxious Fumes.

By Robert G. Skerrett.

ONLY a short while ago an appalling catastrophe was narrowly escaped in the subway of the Rapid Transit system of New York City. In some way, possibly through an overload or a short circuit, the insulation of the power cables gave way, and the intense heat of the electric arc consumed the rubber coating, filling the underground traffic way with smoke and suffocating fumes just at the time when the lines were crowded with the morning rush of office-bound passengers.

More by good luck than good management on the part of the railway company, only a single life was sacrificed, but scores were overcome by the stifling fumes. Fortunately, through the efforts of the fire department, assisted by some of the subway employes and a few passengers who kept their wits about them, those who had been stricken were gradually removed from the subway and carried to the air, where some revived, while others, more affected by the fumes, were taken to hospitals. In this work, a number of the firemen were rendered unconscious by the smoke, and the accident served to call forcibly to the attention of the public the inadequacy of existing relief facilities.

ENDURANCE TESTS FOR TWO SCORE MINE RESCUE OUTFITS.

Since then, a rescue squad has been proposed in connection with the fire department and is in the process of organization, and these men are to be equipped with helmets and a supplemental breathing apparatus which will make it possible for them to carry on their task of life saving for an hour or more when atmospheric conditions would otherwise halt their efforts. Once more we have an example of the all-important part that rubber plays in modern safety devices. The equipment chosen for this rescue work is of foreign inception but is already extensively recognized in this country not only by the government and civic authorities but by certain of the most progressive of our industries in which danger from smoke, gas, or other harmful fumes, lurks.

There are rescue helmets of a variety of makes on the market, and all of them aim to accomplish the same end by more or less kindred methods of functioning, but probably the highest development of these life-saving auxiliaries are those produced by the famous Draeger Works of Lubeck, Germany. Only by persistence and endless experimenting in the effort to improve has this combined helmet and supplemental breathing outfit reached its present perfection and its now rapidly widening adoption.

About twenty-two years ago, the founders of the company recognized the important part that compressed oxygen might play in all branches of rescue work. And they set about devising a uniform type of rescue equipment in which the motive power contained in compressed oxygen should be used to best advantage. At the same time they sought to find a compact auxiliary which would permit of the cleansing and regenerating of the exhaled air, so that the man dependent upon the supply could breathe without restraint and receive the chemical constituents needful to sustain his powers, while the increased discharge of carbonic acid gas from his lungs should be properly taken care of during his moments of greatest muscular exertion.

The harder a man works the more he consumes body tissues and the greater is the measure of carbonic acid gas, technically called carbon-dioxide, which that combustion induces. Accordingly, the fouler, so to speak, the exhalation from the lungs. Logically, this means that a rescue helmet in which the wearer must breathe must be so arranged that it can take care of this poisonous gas; and to do this efficiently and also economicaly there must be some automatic way of handling this gaseous bi-product of the toiling body. Now this feature of economy has been in the past one of the most crucial phases of the problem, and the world owes a debt to the patient and exhaustive researches of Bernhard Draeger.

As far back as 1908, at the First International Rescue Congress, held at Frankfort-on-the-Main, this investigator announced that any rescue apparatus capable of meeting the heaviest demands should be able to supply 50 litres of pure air per minute and be constructed so as to furnish two litres of oxygen per minute. Besides doing this, the apparatus must be capable of absorbing 94 litres of carbon dioxide, which the average worker would exhale during a period of two hours. Prior to 1904 these values were unknown to physiological science, and their announcement was received with skepticism. Since then the professional world has come to realize the correctness of these requirements.

To return to the feature of economy, the German physicist recognized that all of the oxygen taken into the lungs was not absorbed into the system and that a very appreciable percentage of it passed out again at the time of exhaling. His aim was to regenerate this oxygen and at the same time to make up the deficiency by drawing on a supply of compressed oxygen held in a compact metallic flask. To this end, he found that granules of caustic potash and caustic soda had the power of absorbing the carbon dioxide and water vapors coming from the lungs while leaving the life-saving oxygen contained in the exhaled breath to pass on to be used over. Just enough new oxygen from the reserve tank was then required to furnish the needful normal called for by nature and demanded by the amount of work done by the wearer of the rescue apparatus at the time.

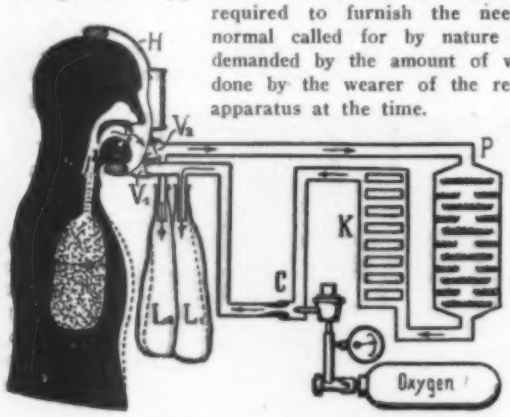


DIAGRAM SHOWING HOW THE SMOKE HELMET WORKS.

The accompanying illustration, with the following description, will enable a layman to understand the regenerative cycle of this ingenious and up-to-date life-saving equipment for service anywhere in any irrespirable atmosphere. When the apparatus is donned, the lungs and respiratory organs of the wearer are completely shut off from the external air, and form, as it were, a portion of the apparatus. In this enclosed system, into which air is no longer admitted from the outside, there are only two forces in operation for actuating the air, namely, the lungs of the wearer and the injector C, of the outfit. The injector is operated by the power of the compressed oxygen in the tank. Between these two forces are interposed the breathing bags L_2 and L_1, as reservoirs, and at the same time acting as compensating buffers between the intermittent respiration of the human lungs and the continuously circulating air of the apparatus. The lungs actuate the air in order to nourish the body with oxygen and to expel the carbon dioxide, while the apparatus sets the air in motion for the purpose of eliminating the carbon dioxide with which it is contaminated and also to enrich it once more with fresh oxygen.

The exhaled air passes through the exhaust valve V_2, then into the air bag L_2, and from there it is drawn in a uniform manner. It next flows through the connecting conduit to the potash cartridge, P, where the carbon dioxide expelled from the lungs is absorbed and thus rendered harmless. At the same time, the cartridge becomes heated by the warm breath which reaches it. The air, now free from carbon dioxide, next enters the cooler, K, where a portion of the heat it has absorbed is dissipated by radiation, whence it passes on to the injector, C. Here it is revivified with oxygen supplied from the oxygen cylinder at the rate of two litres (120 cubic inches) per minute. The air mixture is now once more ready to be inhaled, and flows through the second circulating pipe into the inhaling bag, L_1, whence it is inhaled through the inhaling valve, V_1. The cycle of operations then begins afresh.

The capacity of the apparatus is such that it is able to purify about 3,000 litres (105 cubic feet) of air per hour, to supply about 120 litres (4½ cubic feet) of oxygen and absorb 50 litres (1¾ cubic feet) of carbon dioxide. Double these quantities are dealt with in two hours. The potash cartridges and oxygen cylinder, which form the ammunition of the rescue weapon, are calculated to serve only for a certain time, and at the end of that period they must be replaced. The oxygen cylinders can be recharged, but the spent potash cartridges are as worthless as those discharged from a gun, because of the chemical changes that have taken place in the soda and potash which have absorbed moisture and carbon dioxide.

The so-called cartridges are a mechanical counterpart of the lungs, inasmuch as they are provided with a large surface for absorption. In order to insure the taking up of the carbon dioxide and vapor, a series of 20 flat metal trays is arranged upon which there are layers of caustic potash and caustic soda, in granular form, inside of the metallic casing. These trays, with their openings, are so placed that the air in following through pursues a zig-zag course, and thus is brought intimately and continuously in contact with the cleansing chemicals. In the latest form of the rescue equipment, a spent cartridge can be withdrawn and a fresh one placed in the circuit in a few seconds, and as we have said, provision is made for a continuous working period of two hours for the rescuer.

Now the man interested in rubber naturally wants to know how extensively that material enters into the vital get-up of this extremely ingenious apparatus. To begin with, the two air bags containing, respectively, the respirable and the exhaled air, are made of thick rubber of the finest sort, because their elasticity is an important characteristic, and are covered with leather pads to shield them from harm in service. The helmet would fail of its purpose if it did not fit snugly about the face of the wearer so as to shut out foul gases seeking admission back of the ears and likewise the escape of the vitalizing air. Accordingly, the apparatus has been made so that it will adapt itself to every shape of face. If the face be long or broad, large or small, the inflatable rubber pad just inside of the headpiece conforms to the shape of the wearer. This pneumatic pad is in effect much like an oval air cushion, and the degree of its inflation is regulated by the rescue worker by simply operating a rubber bulb pump. The face pad is made of the best Para rubber and in one piece, and the little hand pump is of the same fine material. Indeed, all of the rubber parts are of selected quality, because otherwise they would not measure up to their work in some atmospheres charged with certain chemical fumes.

INFLATABLE RUBBER FACE PAD AND RUBBER BULB PUMP FOR FILLING IT WITH AIR.

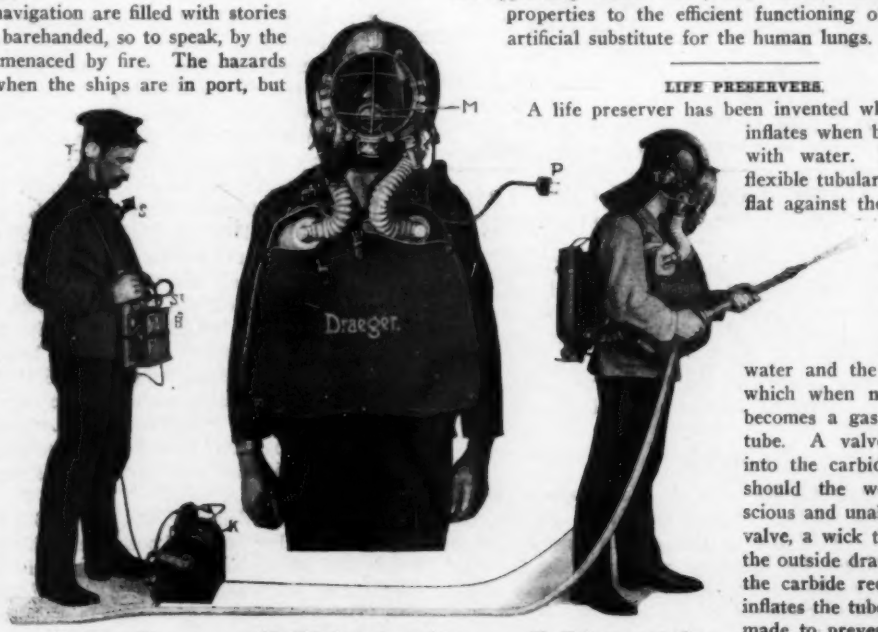
But this is not the end of india rubber's share in the construction of this life-saving apparatus. The various flexible tubes, all gaskets or washers, ear pieces, mouthpieces, telephone insulation, etc., are of rubber. Another form of the so-called rescue equipment, not intended for so prolonged a service, does away with the helmet and the wearer draws his air directly into his mouth by a simple tube and his eyes are protected by goggles secured in a fume-tight setting of rubber which also pinches his nose and closes his nostrils, so that he can not unwittingly or in a moment of excitement draw the foul air into his lungs. The particular virtue of this latter form is its greater compactness and the added facility with which it can be carried by a fireman and donned at the critical moment. Of course, it does not afford the same general protection to the head of the wearer nor can it

give the same length of service because its oxygen flask and its regenerative cartridges are not equal to working demands in excess of half an hour. However, there are a great many fields of usefulness for this type, and rubber is just as necessary for the inhaling and exhaling bags and the associate flexible connections.

Now, we naturally want to know how broad are the fields of usefulness for life-saving equipments of this sort. In using the term life-saving we include as well accident prevention which might otherwise result fatally. We have only to follow the monthly records of fires in large cities to realize the hazards to which the fire fighters are exposed. Day after day, we hear of one or more of these brave men perishing in the smoke for the lack of some protective equipment, while scores of their fellows are rendered unconscious. So, too, the lack of some such apparatus makes it all too often impossible for the firemen to reach others imperiled, who in consequence are numbered among the flames' victims.

From time to time we read of fires on shipboard, and it is doubtful if the average landsman realizes the peril that must be faced in battling with a burning or smoldering cargo. Fire fighting on shipboard very frequently means getting at some fairly inaccessible point in the crowded hold, and the source of danger may be a type of combustion which smokes densely rather than flames. The entire craft and all on board may be endangered unless the source of the trouble can be reached, because the spreading of the fire may touch inflammable stuffs of a fierce-burning nature or other goods that might explode by reason of excessive heat alone.

The annals of navigation are filled with stories of the risks faced barehanded, so to speak, by the crews of vessels menaced by fire. The hazards are bad enough when the ships are in port, but think of the added terrors when the craft is isolated upon the wastes of a stormy sea! No cargo is more to be feared when fire attacks it than that of cotton bales, for water seldom suffices to smother the smoldering stuff, and only by getting at the burning bales and casting them overboard can the menace be disposed of. In work of this sort, the smoke helmet would be invaluable, and a number of these should be carried aboard every sea-going craft.



B—Dry cells. K—Reel. M—Telephone transmitter. P—Telephone circuit plug. S—Telephone transmitter for attendant. S¹—Battery connection. T—Telephone receiver.

But it is not alone in fighting fire that apparatus of this sort are needful. Since the introduction of oil fuel into the navy, many times the firemen have been overcome by residual gases left in the fuel tanks after the oil has been drained away. The men have gone into the tanks to clean them and neglected to make sure that it was safe to do so. In some instances lives have been needlessly sacrificed in this fashion. Again, spontaneous combustion in the coal bunkers has filled the spaces with death-dealing fumes, and the fire fighters have fallen at their work while their rescuers have suffered as well. Quite recently an Italian ship lost one man while four of the would-be rescuers narrowly escaped a similar fate, all because of the foul air in a water tank. Another case, that of an oil tanker, cost the lives of six men—the man that first ventured into one of the ship's exhausted tanks filled with poisonous gases and his five courageous fellows who tried in vain to rescue him. A single smoke helmet would have avoided this dire toll.

As the records of our Bureau of Mines show, the annual loss of life among the workers in our coal mines is largely made up of the deaths of volunteer rescuers who, with inadequate protective equipment, push on into the gas-laden shafts and galleries seeking to reach their stricken or imprisoned fellows. This emphasizes how vitally necessary it is that a sufficient number of smoke helmets should be ever ready at all coal mines. Fortunately, the United States Government has instituted mine rescue stations in our principal coal field districts, and the smoke helmets with which they are furnished have been the means of doing notable life-saving and salvage work. In the chemical industries and in other manufacturing enterprises where fire is a conspicuous peril or where asphyxiating fumes may develop from one cause or another, it is vitally imortant that supplemental breathing apparatus for rescue work should be provided. Gradually, this need is being more broadly recognized, and year by year rubber is lending its aid in this humane line of effort. The particular apparatus which we have taken as an example is recognized the world over, and today there are probably more than 8,000 of them in service. It is to this same German firm that we are indebted for the pulmotor, which has achieved such astonishing results in reviving the apparently dead. Here, too, rubber has lent its peculiar properties to the efficient functioning of this remarkable artificial substitute for the human lungs.

LIFE PRESERVERS.

A life preserver has been invented which automatically inflates when brought in contact with water. It consists of a flexible tubular girdle which lies flat against the chest under ordinary conditions and at one end of which there are two receptacles, one containing water and the other a carbide, which when mixed with water becomes a gas that inflates the tube. A valve lets the water into the carbide receptacle, but should the wearer be unconscious and unable to operate the valve, a wick that extends from the outside draws the water into the carbide receptacle and thus inflates the tube, provision being made to prevent over-inflation.

Another new style of life preserver is the one with which German sailors have been provided since the outbreak of the war. This device has a cork belt and a rubber vest which can be inflated in a moment, the air feed pipe when in use coming opposite the mouth. This vest is 24 inches long and 10 inches wide.

Branch managers of the United States Tire Co. from all over the United States gathered in Detroit the second week in February for a conference. E. S. Williams, president of the company, attended this conference, which lasted for several days.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

A Review of Recent Progress in Rubber Chemistry—II.

Contributed.

The author of this paper, a well known rubber chemist, submitted it, not as in any way a descriptive article, but merely as an index of progress during the last two years. To elaborate it and make it a readable article would necessitate the use of many hundreds of pages.

COAGULATION.—*Continued.*

W. PAHL (Chimie Industrie, 1913, p. 142) has patented the use of carbonic acid, hydrochloric acid, etc., for coagulating, and Heinrich Coloseus (THE INDIA RUBBER WORLD, January, 1915, p. 197) has received a Brazilian patent for coagulating latex by use of alkalies followed by use of iron or similar heavy metal salts. L. C. Davidson uses soap, oils and formaldehyde, and also creosote, for coagulating latex (THE INDIA RUBBER WORLD, December, 1914, p. 130).

In German patent No. 260,916, H. Klopstock claims the use of a compound of selenium or tellurium with a halogen for vulcanizing. Rape oil thus treated is said to form a tactice. This is evidently a cold vulcanization.

IMPROVING RUBBER BY TREATING THE RAW PRODUCT.

Several attempts have been made lately to improve the lower grades of rubber by treating the product in various ways with chemicals before vulcanization. D. Spence in United States patent No. 1,112,938, assigned to the Diamond Rubber Co., has claimed the use of metallic sodium or alkaline salts for improving low grade or synthetic rubbers. (THE INDIA RUBBER WORLD, November, 1914, p. 67.) H. O. Chute has received United States patent No. 1,051,987 for process of treating rubber which claims the maceration of crude rubber with pyroligneous acid containing the oily products of wood distillation. The object is to creosote the rubber, as is done by the Brazilian system of smoking.

J. E. Ephraim, in German patent No. 273,774, adds a little sulphur and vulcanizes slightly. He may also add a little nitrogenous substance.

A. Heim, in British Patent No. 18,506 of 1912 (THE INDIA RUBBER WORLD, February, 1914, p. 224), uses methyl acetate to dissolve out depolymerized rubber from that which is polymerized. Debauge, in French Patent No. 424,457, purifies rubber by dissolving it and precipitating the caoutchouc.

Heineman (German patent No. 276,678) claims a process of separating sterling caoutchouc from depolymerized caoutchouc, in synthetic rubber.

VULCANIZING.

Axelrod had announced that continued milling affects the affinity of rubber for sulphur. Spence and Ward ("Chemische Industrie," Vol. 11, p. 274) show that milling does not affect the affinity for sulphur, for by taking two samples and milling one for one and one-half hours, while the other was lightly worked, the amount of combined sulphur was the same in both after like treatment in the cure, but the physical properties of the two samples were different, as the long-milled sample was much weaker. These authors have described ("Chemical Abstracts," April, 1913, p. 271) an experimental vulcanizer by means of which exact experimental conditions can be obtained. These same authors (THE INDIA RUBBER WORLD, April, 1913, p. 340) have written on the chemistry of rubber and theory of vulcanization.

F. Ahrens (THE INDIA RUBBER WORLD, October, 1914, p. 18) claims that vulcanization is a reversible reaction and proves it by analyzing an old sample which contained less combined sulphur than it did when new.

In the report of Gross Lichterfelde (THE INDIA RUBBER WORLD, February, 1914, p. 267) Hinrichsen and Kindscher contributed their theory of vulcanization. In cold vulcanization they find that $C_{10}H_{16}S_2Cl_2$ is the final product ("Journal of the Society of Chemical Industry," 1913, p. 544).

A. O. Bourne experimented ("India Rubber Journal," 1913, p. 120) on vulcanizing and testing the product physically, and deduced laws for increase of temperature and time as applied to vulcanization. No chemical tests were made to confirm this.

O. Kausch ("Kunststoffe," No. 18, 1912, p. 363) has compiled a list of all British patents on vulcanization, granted before 1912.

Hinrichsen ("Journal of the Society of Chemical Industry," p. 544, 1913) found that the limits of sulphur which could be combined with rubber in a cumene solution were at about 32 per cent.

SULPHUR IN VULCANIZATION.

The role that sulphur plays in vulcanization has lately been a matter of some dispute. It is well known that sulphur combines with rubber in widely varying amounts, ranging from ½ per cent. as reported by Heilbronner in cements vulcanized by the ultra-violet rays (THE INDIA RUBBER WORLD, December, 1914, p. 130, to 32 per cent., as long ago announced by C. O. Weber), shown by Hinrichsen and just referred to. In each case it appears that perfect vulcanization has taken place if vulcanization be defined as that change in rubber which gives it useful qualities, though the vulcanized rubbers are not vulcanized to the same degree, and differ widely in their physical characteristics.

H. Loewen ("Zeitschrift Analytischer Chimie," Vol. 25, p. 1553) has reviewed the material on which Ostwald based his absorption theory for sulphur in rubber. He thinks the fact that rubber forms a whole series of vulcanized products, the end members of which are not definite chemical compounds, is just as strong as argument for the chemical as for the absorption theory of vulcanization. In his opinion Ostwald overlooked the fact that in forming bromine and nitrosite derivatives sulphur goes to the derivative, *i. e.*, is chemically bound to the molecule. E. Stein ("Gummi Zeitung," Vol. 27, p. 623) criticizes the above and believes the solution method is the only one by which to study the phenomena of vulcanization, Loewen (*Ibid.*) takes exception to the above and Stern replies. Spence ("Gummi Zeitung," Vol. 27, p. 1646) also criticizes Loewen's paper and his interpretation of facts.

Later ("Gummi Zeitung," Vol. 27, p. 1301, and INDIA RUBBER WORLD, December, 1913) Loewen experimented by observing rubber and sulphur under a microscope while heated to a vulcanizing temperature, and when cooling he found that the rubber formed a clear solution with sulphur when hot, and on cooling the sulphur separated out in globules, changing to crystalline sulphur on further cooling. This, he thinks, proves that sulphur is not dissolved in the colloidal state. He thinks the absorption theory of vulcanization should be dropped.

H. Skellon (INDIA RUBBER WORLD, December, 1913) experimented on the migration of sulphur by placing a sheet of rubber containing 40 per cent. sulphur over one without sulphur and then submitting them to vulcanizing temperature. He found that the sheet free from sulphur had absorbed and combined with about 10 per cent. sulphur. ("Kolloid Zeitschrift," 1914, p. 96.) He deduces from this experiment ("India Rubber Journal," 1913, p. 723) that sulphur is soluble in polyprene sulphide, $C_{10}H_{16}S_3$. F. Kirchoff ("Kolloid Zeitschrift," 1914, p, 35) thinks sulphur is only a catalyzer. Hinrichsen ("Journal

of the Society of Chemical Industry," 1913, p. 544) has discussed the action of sulphur and sulphur chloride in vulcanization. It has recently been shown that the United States is the greatest producer of sulphur in the world. (THE INDIA RUBBER WORLD, August, p. 536.)

ACCELERATORS OF VULCANIZATION.

For a long time it has been known that certain fillers or metallic compounds accelerated vulcanization and improved the rubber. Lead oxide or litharge is probably the best known Antimony sulphide and magnesia are also known to hasten the vulcanizing and have been largely used, and lime is known to perform the same function to some extent. This action of one substance in hastening the reaction between two others when the hastener remains in the same form after the reaction as before, is called catalytic action. It is common to ascribe many reactions which are not understood to catalytic action but it is well known in many arts that there is such a phenomenon.

We recently (THE INDIA RUBBER WORLD, September, 1914, p. 650) treated the subject of the influence of nitrogen compounds on vulcanization rather fully, gathering together various scattered references on this subject. That this subject has only lately attracted the attention of writers on rubber chemistry is seen from the fact that at the Eighth International Congress of Applied Chemisry, held in New York in the fall of 1912, it was not mentioned, while, as before noted, the influence of resins on vulcanization was discussed by L. E. Weber, C. Beadle and Stevens; and G. H. Savage, E. Marckwald, F. H. Hinrichsen, J. G. Fol, C. P. Fox and Whitby also contributed to the rubber section, moreover such well-known savants as Carl Duisberg, Sir William Ramsey and W. H. Perkins were present.

At this congress no one brought up the subject of the influence of the pectous portions, the proteins or the insoluble constituents on vulcanization, but it appears that Messrs. Beadle and Stevens had, a short time previously, contributed an article on the influence of the nitrogenous and resinous constituents on vulcanization ("Kolloid Zeitschrift," July, 1912, p. 61). Since that time articles on this subject from these authors have been rather widely published, though there seems to have been but two sets of experiments ("Kolloid Zeitschrift," 1913, p. 64; "Journal of the Society of Chemical Industry," December, 1913; "Chemical Abstracts," 1913, p. 270; "Kolloid Zeitschrift," Vol. 14, 1914, p. 91; "Kunststoffe," Vol. 4, 1914, p. 255; "India Rubber Journal," Vol. 47, p. 403; THE INDIA RUBBER WORLD, May, 1914, "Journal of the Society of Chemical Industry," 1914, p. 268). W. A. Caspari ("Journal of the Society of Chemical Industry, Vol. 23, pp. 1041-3, THE INDIA RUBBER WORLD, April, 1914, p. 340) reported on the composite nature of rubber finding the pectous portions stronger. The fact that the nitrogenous portions of the rubber exerted an influence on vulcanization led to an inquiry as to the influence of added nitrogenous matters of various kinds. Messrs. Beadle and Stevens in the article above referred to, tried casein, and found it increased speed of vulcanization but did not increase tensile strength, etc. Fred. Arnt (THE INDIA RUBBER WORLD, July, 1914) pointed out that albumen increased speed of vulcanization, and the "Gummi Zeitung" (No. 28, p. 371), in an anonymous article took the same position. W. Esch received German patent No. 273,482 of November, 1912, for the use of albumen in rubber. The method is to make a paste with lime and add it to the rubber; then add some kind of tanning material or smoke it. The hastening influence does not seem to be here considered the principal consideration. Recently a hastener has appeared on the English market, but its composition is not given. (THE INDIA RUBBER WORLD, December, 1914). Vanadium is also claimed as an accelerator. (THE INDIA RUBBER WORLD, August, 1914, p. 601.) Marckwald ("India Rubber Journal," November 22, 1913) found that magnesia was a hastener. Dannerth (THE INDIA RUBBER WORLD, November, 1914, p. 75) mentioned other accelerators.

VULCANIZING WITH THE ULTRA-VIOLET RAYS.

G. Bernstein and Heilbronner (THE INDIA RUBBER WORLD, November, p. 24, and December, 1914, p. 130) recently devoted much attention to the action of ultra-violet light in vulcanization and have proposed that solutions be thus vulcanized and then used for cements.

Bernstein received British patent No. 17,195 of 1914 for this process.

V. Thomas received French patent No. 460,780 of July, 1913, but under the international convention taking the date of July 26, 1912. This relates to the vulcanization of films of rubber solution by the ultra-violet ray.

E. Stern ("Gummi Zeitung," 1913, p. 1340) has referred to this idea, and Dastre presented a paper before the French Academy of Science reviewing Bernstein's work. Victor Henry first gave accounts of vulcanizing by this method several years ago.

DECAY, TACKINESS AND DEPOLYMERIZATION.

The subject of the perishing and decay of rubber has attracted some attention of late. J. G. Fol and N. L. Sohngen ("Chemical Abstracts," 1914, p. 2958) have determined that air-dried rubber cannot support micro-organisms. Spots of various colors produced by bacteria sometimes appear without changing the mechanical consistency of the rubber. They could not find an enzyme which would break down rubber. G. S. Whitby reported on this at the Eighth International Congress of Chemistry in New York, in 1912 (Vol. 9 reports). He thinks decay due to enzymes.

A. G. Rossem ("Le Caoutchouc & la Gutta Percha," February 15, 1913, p. 6981) attacks Gorter's theory that tackiness is caused by auto-oxidation. He thinks it due to light, not infection. Kirchof (THE INDIA RUBBER WORLD, February, 1914) has discussed oxidation of rubber, but Heubener disputes his statements. G. Bernstein ("Chemical Abstracts," 1913, p. 3548) has also given views on oxidation.

F. Kirchof ("Kolloid Zeitschrift," 1914, p. 35) shows that vulcanized rubber behaves differently from raw rubber when oxidized with oxygen gas. Only one double linkage seems present in vulcanized rubber. G. Heubener (THE INDIA RUBBER WORLD, February, 1914, p. 224) criticizes the above article by Kirchof on oxidation. F. Ahrens ("Kunststoffe," vol. 3, p. 478) describes oxidation. Spence and Young ("Kolloid Zeitschrift," 1913, p. 871) have described methods for oxidation electrically. It is claimed that this method was first proposed in "Gazzett Chimica Italiana," 1907, p. 426.

ACTION OF CARBONIC ACID ON RUBBER.

F. Steinitzer experimented with the action of carbonic acid gas on rubber membranes ("Gummi Zeitung," 1912, p. 1625). He found that the absorption of the gas may vary 25 per cent. with different rubbers. Pure rubber becomes tacky on absorption of the gas, and the tensile strength decreases. P. Phillips found that rubber gaskets were excellent with carbonic acid gas containers, as they swelled and became tight. Ditmar and Thiesen ("Kolloid Zeitschrift," 1912, Vol. 11, p. 77) examined changes in fillers. They found that these changed to sulphides and sulphates in many cases.

DYEING RUBBER.

Ditmar (THE INDIA RUBBER WORLD, February, 1914) has shown that vat dyes may be mixed with raw rubber and vulcanized without change of colors. Two patents have recently appeared covering this process. (THE INDIA RUBBER WORLD, November, 1914, p. 67.)

(To be concluded.)

The United States Rubber Reclaiming Co. will rebuild the section of its plant at Buffalo, New York, which recently suffered $75,000 fire damage.

What the Rubber Chemists Are Doing.

As recent proposals have been made to vulcanize with selenium and tellurium, it may be of interest to give the figures of production in the United States which appear in a report of the United States Geological Survey, by F. L. Hess (Part I, p. 289). This statement is made—"During the year 1913 selenium was produced from the anode muds in electrolytic refining of copper by the American Smelting & Refining Co., the Nichols Copper Works and the Raritan Copper Works. The production amounted to 29,097 pounds, valued at about $46,900. The production of selenium is governed entirely by the demand. Other selenium resources are sufficient to meet largely increased demands if they arise. The Raritan company also produced small quantities of tellurium which were sent to Europe."

From the foregoing it is evident that it must be demonstrated that selenium produces a vulcanized product much superior to sulphur before there can be any development of the industry; but if there is a demand the supply can be found, and if a large demand should spring up the price would undoubtedly fall, as a large amount is now wasted because of lack of demand.

PRESERVING RUBBER.

A. A. Wright has been granted United States patent No. 1,114,044 which claims to preserve rubber by coating the surface with camphor gum dissolved in alcohol and mixed with pulverized pumice.

HEATING TIRE REPAIR VULCANIZERS BY CHEMICAL MEANS.

British patent No. 4,313, of 1914, has been granted to W. A. Miles for an apparatus for vulcanizing tires in repairing, the heating being done by burning blocks of deflagrating substances, such, for example, as a mixture of saltpetre and charcoal or chlorate of potash and wood dust. This is put in the form of a ball or pile on a plate in contact with the tire and then ignited. The heat developed by the combustion is supposed to be regulated so as to be just sufficient to vulcanize the raw rubber in the repair patch.

COAGULATING.

C. H. Boehringer Sohn, in German patent No. 275,716, claims the lactate of aluminum as a coagulant, stating that 250 C. C. of a 5 per cent. solution will coagulate 3,000 grams of sap in 8 minutes.

F. A. Byrne has received British patents Nos. 18,060, 18,061 and 18,062, of 1912 (Illustrated Official Gazette, December 2, 1914) for a process of coagulating latex. It consists in smoking with vapors of: First, creosote; second, formaldehyde; third, sulphurous acid gas. These may be mixed with pyroligneous products. It really appears to be an ordinary smoking process with the above vapors added as desired.

CONDENSATION PRODUCT.

Emil Hemming, in United States patent No. 1,125,906, claims the process of hardening a condensation product outside a mold in which these products of formaldehyde and phenol are shaped.

R. C. Fulton, in British patent No. 9,066, of 1914, claims the spraying of an aldehyde or ketone into the latex while coagulating. From 3 to 5 per cent. of protein is said to be precipitated with the rubber by this treatment and this protein improves the rubber.

SYNTHETIC RUBBER FROM BAKU PETROLEUM.

The fraction of Baku petroleum boiling between 98 degrees and 106 degrees Centigrade yields about 20 per cent. of adipic acid which, through its amide, may be converted into butadiene, though the process is said to be scarcely commercial as yet. (See "Petroleum," 1914, p. 1376). This may open up a field for our California petroleum and make us independent of the embargo.

THE STUDY OF COLLOID CHEMISTRY.

T. Svedburg has addressed the German Chemical Society on the subject of colloid chemistry and at the end of extended remarks he predicts a great extension of this study in the rubber industry.

RECLAIMING OF RUBBER SOLVENTS.

Henry Barthelmy has written on this subject at length in "Le Caoutchouc et la Gutta Percha" for October, 1914, and following months. There is a long review of the art as applied to nitrocellulose industries and there are long tables of the vapor tensions of various solvents at different temperatures and pressures.

The reclaiming methods are classified as follows:

First, the chemical processes; second, the physico-chemical processes; third, the essentially physical processes. As an example of the first process is cited the dissolving of alcohol and ether in sulphuric acid for the later formation of ether from them. Likewise carbon bi-sulphite is treated with potash and alcohol for the formation of xanthate of potash, which is then recovered. Toluol is acted on by nitric acid to form nitro-toluol, which is thus reclaimed.

The physico-chemical processes are illustrated by the absorption in a colloil, as, for example, Marseilles soap or nitro-cellulose or the use of calcium chloride or amyl alcohol for solution of the volatile solvents.

Condensation of solvent or precipitation or electrical precipitation illustrates the purely physical processes. The condensation may be under pressure as advocated by the liquid air company. It must be observed that compared with the simple and effective condensation and distillation processes in use in the country for reclaiming solvents these processes seem unnecessarily complex and expensive to operate besides requiring highly skilled operatives to work them.

ANOTHER VIEW OF BI-SULPHITES IN COAGULATING.

In France it is reported that experiments have proved that the treatment of latex with 0.25 per cent. of bi-sulphite of sodium may diminish the elasticity 20 per cent. and the resistance 15 per cent. At the same time it increases the necessary time of vulcanization. Reference to THE INDIA RUBBER WORLD of August, 1913, p. 222, December, 1913, p. 157, and November, 1914, p. 68, shows by the reports and experience of Beadle and Stevens that rubber, if anything, is improved by this treatment, and it is recommended.

THE SELF-REGISTERING DYNAMOMETER.

In this paper of November 1, 1914, p. 108, was an account of the self-registering dynamometer of Cheneveau and Heim. In "Le Caoutchouc et la Gutta Percha" of December 15, 1914, there is quite a controversy between A. Dubosc and the inventor as to its merits and as to the methods of calculating its functions. A. E. Davis has made use of these formulas in an article in the "Journal of Industrial and Chemical Engineering" for December, 1914. He used the Swartz apparatus for determining hysteresis but he recommends the use of the formulas as a basis of specifications for rubber goods.

The plant at Lawrenceville, Illinois, formerly owned by the American Asphalt & Rubber Co., and purchased about a year ago at receiver's sale by the Canadian Mineral Rubber Co., of Montreal, Quebec, is soon to be reopened, with a force of about 100 operatives, turning out mineral rubber.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

AN EXCESS OF TECHNICALITIES IN SPECIFICATIONS.

TO the Editor of THE INDIA RUBBER WORLD:

In your February issue, page 256, I note an item signed "Chemist" and entitled "Too Much Analytical Chemistry," which is read with considerable interest. Having long been of the same opinion, and realizing the impossibility of manufacturing to strict laboratory specifications, it is gratifying to learn that a prominent chemist has finally concluded there can be an excess of technicalities in specifications.

Some time ago a Western city desired to purchase a quantity of fire hose, to be manufactured under very elaborate specifications, prepared by a coterie of chemists, in which specifications a certain acetone, a certain chloroform and a certain alcohol potash extract were demanded, the lining, or tube, to contain not less than 45 per cent. of the finest Para. A maximum amount of ash was provided for, and sulphur contents were given a limitation as to the percentage permitted.

In addition to all this, a variety of mechanical tests was also provided for, some of which were possible, while others were practically impossible; but insult was added to injury by demanding that finished product produced under these instructions be guaranteed for a period of four years, and that if at the end of the four-year period each and every 50-foot length could not withstand a rather severe pressure test, the manufacturer would replace, free of charge, such hose as might have failed.

These specifications were mailed broadcast to the manufacturers of fire hose, attached to an invitation to bid, with the result of just one bid being received, and that at $1.20 per foot. Wondering why so few responded, the writer was consulted, who, after reading the specifications, candidly informed the officials that no manufacturer could intelligently bid on such specifications.

This conference resulted in a request to the writer to draw up specifications from his standpoint, which he did, confining them entirely to strict mechanical tests, such as elasticity, permanent set, tensile strength, friction, elongation, expansion, writhing and similar items, closing with a guarantee to cover a reasonable period of time, making allowance to the manufacturer for service rendered if defective hose had been in use one or more years.

These revised specifications were sent out to the same concerns previously solicited, resulting in almost universal bidding, the highest being about 80 cents, with the lowest, best and accepted bid naming less than 65 cents per foot—which bid, by the way, was from one of the largest, strongest and best-equipped of the American companies. Hose delivered upon this contract was stronger and more reliable than could have been possible with the previous laboratory specifications.

The chemist is a valuable citizen, and highly useful in his place, but that place is not to dictate to the experienced rubber manufacturer not only how he shall make his product but of what he shall make it; and then be asked to guarantee the result and pocket the loss if perchance he could not meet some other chemist's individual analysis that did not happen to come quite up to the ideal specifications as to chemical contents demanded.

W. G. BROWN.

The new catalog of the Hodgman Rubber Co., relating to rubber sundries and specialties, is exceedingly well done, not only from a typographical standpoint, but from that of the complete and well arranged information giver. In some 90 pages, generously illustrated in colors, the whole story of the Hodgman products in the lines mentioned is adequately covered. The brochure is given an added interest by some excellent halftones showing work rooms in the Tuckahoe factory of the company.

DR. HINRICHSEN'S CONTRIBUTION TO RUBBER CHEMISTRY.

The obituary page of the February number of THE INDIA RUBBER WORLD contained an announcement of the very sad death of Dr. F. W. Hinrichsen, the noted German chemist, on the battlefield before Lodz in December while he was serving as second lieutenant in a Saxon reserve regiment. Notwithstanding his comparative youth, being only 38 years of age at the time of his death, he had made a number of notable contributions to the literature of rubber chemistry. After graduating from Heidelberg in 1899 he taught chemistry in the technical high schools of Aix-la-Chapelle and Charlottenburg. He entered the Royal Material Testing Bureau (Bureau of Standards), as general chemist, in 1906, devoting particular attention to the solution of rubber problems. He contributed to the leading technical publications of Germany a great number of articles on the chemistry of rubber. His communications on "Molecular Sizes in Rubber Latex" (Mitteilungen, 1911), "Rubber Resin" (Zeitschrift für Angewandte Chemie, 1910), "Cold and Hot Vulcanization" (Kolloid-Zeitschrift, Chemiker-Zeitung) are considered as authorities. His book on "Rubber and Its Tests" (Leipzig, 1910) was highly commended by the leading rubber publications of the world.

DR. F. W. HINRICHSEN.

THE ALEMBIC BRAND OF SYNTHETIC RUBBER.

The February issue of this publication contained a reference to the new "Alembic" rubber which is being manufactured—on a small scale—in Perth Amboy, New Jersey, by the Alembic Process Co. A correspondent interested in rubber matters generally writes us as follows regarding this new brand of synthetic rubber:

"I spent three days last month at the factory in Perth Amboy and made a complete 'run' of rubber. Inasmuch as I bought the materials myself and watched the operation very carefully during the entire process, I know that it contained no natural rubber. We vulcanized a sample of the 'run' that I made, and a practical rubber man pronounced the result 'good.' This sample was vulcanized in the presence of several experienced rubber men."

The Automobile Show opens in Boston, March 6, and will continue until the 13th. The Braender Rubber & Tire Co., of Rutherford, New Jersey, will be one of the exhibitors at this show, displaying a full line of tires and tubes, having space No. 605, department G.

The Editor's Book Table.

THE RUBBER INDUSTRY. OFFICIAL REPORT OF FOURTH INternational Rubber Congress, London, 1914. Edited by Joseph Torrey, Ph.D., and A. Staines Manders, London. The International Rubber and Allied Trades Exhibition, Ltd. [8vo, 516 pages. Price 15s. 6d.]

THIS volume contains not only the proceedings of the London Congress of 1914 and the papers and discussions of that meeting, but also the principal papers read at the New York Congress in 1912. There is also a comprehensive introduction by Dr. D. Spence. Those who are in the habit of skipping introductions in works of this character will do well to revise their practice in the present instance. It is a carefully written, well-balanced paper admirably suited as an introduction to the more specialized articles which form the bulk of the work. A revised synoptical table of all the rubber now or recently on the market is added to this introduction.

While, of course, it is impossible to treat of all the interesting papers read at the Congress, the first is one that may by no means be passed over. This is "The Systematic Study of Rubber Production," by R. N. Lyne, Director of Agriculture in Ceylon. This is an exposition of and argument for systematic and continued study of the factors which lead to the production of more rubber, better rubber and more economically produced rubber. Only by means of association, whether official or non-official, is it possible for men to go ahead acquiring little by little the knowledge which eliminates waste and loss. The conscientious scientist at the experiment station can make experiments to determine evil practices as well as good, and the truth he learns is not a narrowly held secret to put himself ahead of his neighbor, but is disseminated for the benefit of all who are able and willing to learn. Mr. Lyne made a special plea for such co-operation as should lead to standardization of the product. It is hardly necessary to say that a standardization by which a manufacturer, without leaving his desk, could write a three-line order for as many tons of rubber as he wanted and know exactly what he was getting would mean a saving of expense and a peace of soul that could hardly be overestimated.

In the discussion which followed, Dr. Lock made a suggestion, which was cordially accepted by Mr. Lyne, that while in every station the bulk of the work should be on systematic lines, rigidly maintained, a little corner should be maintained for what Dickens used to call "Fool's Experiments"—that is, liberty to try something based upon the experimenter's lucky or unlucky guesses. Mostly they will be failures, but the experimenter will be better satisfied and now and then an unexpected result will prove a short cut to valuable knowledge.

A fact interesting in more ways than one was brought out in the paper on "Rubber Plantations of Angola," by Prof. C. de Mello Giraldes. Angola, it should be said, is a little country about twice as big as Texas—or having four times the area of Great Britain and Ireland. It is situated on the west coast of Africa, and is a dependency of Portugal. Four years ago there was a considerable trade in wild rubber gathered in the usual wasteful and destructive Native African way. There were no rubber plantations save those of a small and experimental sort. Two years later more than three and a half millions of trees had been planted and the rubber possibilities of this great district were being vigorously and intelligently developed. While *Manihot* is grown chiefly, experiments are being made with *Hevea, Ficus, Castilloa* and *Funtumia*. The *Manihot* planters have the collection made early in the morning, and in this way are able to avoid the waste of having the latex dry on the trees. Such small amounts of plantation *Manihot* from Angola as have yet come to market have sold at a price not far behind that of the best plantation rubber of the East. Several morals may be drawn.

An interesting paper by Andre Cremazy on rubber planting in French Cochin China brought out the fact that more than four million *Hevea* trees are now in the ground and that the soil and climatic conditions are generally more favorable than has been supposed. He says, however, that the planters are making their calculations in the serene conviction that the price will never fall below five francs per kilogram. As those of Ceylon and Malaya look forward to an ultimate price little more than half that, somebody is going to be disappointed.

An exhaustive paper on "Best Methods of Tapping," by W. F. de Bois Maclaren, is a calm presentation of facts which lead to the conclusion that the industry as a whole is injured by the eagerness of some planters to get every possible ounce of latex which their trees will afford. The author believes that it would be well if a general agreement could be made which would prevent the tapping of trees at an age which restrains their growth. He thinks that two feet girth is little enough. Tappings, he thinks, should not consist of more than two cuts daily and on only one side of the tree. He has an open mind but is not yet inclined to the belief that once-a-week tapping may finally become the rule. Sharp watch should be kept on the laborers to prevent a wasteful and damaging extension of the wounded bark area.

Mr. Guy Barr, of the National Physical Laboratory of England, read a paper on fabrics. He begins by showing that the leakage of hydrogen through rubberized fabrics is thirty times as great as through the best oiled silk and that the latter is much lighter than rubber. On the other hand rubber fabrics are more pliable and may be made to possess much greater strength.

How to secure protection from the sun's actinic rays; how to prevent moisture from adhering and adding to the balloon's weight, and how to prevent the development of electricity during rapid passage through the air, are some of the problems which are not likely to occur to the man in the street but which must be solved.

Two papers by Prof. Edmond Leplae, of Louvain University, and Director General of Agriculture, have a singular extrinsic interest. The original papers read at the conference were sent to Belgium for revision and lost in the great catastrophe of the war. The published papers were written briefly from memory by Prof. Leplae. One is on the cultivation of *Funtumia elasticia*. The objection based on its branching habit, he said, could be eliminated by close planting and thinning. The yield is less than with *Hevea*, but this is being improved and the labor costs much less as the tapping is done, not daily, but two or three times a year. The quality of the rubber is very good. The other paper dealt with the problem of soil determination. Chemical analysis, he said, was always available, but it is an expensive method and frequently it happens that it leaves us little better off than we were before, because while we may know that the soil contains certain proportions of various elements, we do not know whether it is what we want for a specific crop. An inexpensive alternative is to put some of the soil from the field in a number of flower-pots and add a carefully calculated amount of manure of different kinds to different pots. The pots are then sown with oats or corn, watched, watered and protected, and the growth, general health, etc., of the various plants carefully noted. In order that there may not be misleading results from digging from an exceptional spot, several hundred pounds of soil are gathered together from many different parts of the

field and these all thoroughly mixed so that a fair average is thus obtained.

The foregoing are only a few of the many interesting papers read at the Congress and now published in full with the discussion. Several were reviewed in the November issue of THE INDIA RUBBER WORLD, and several others have been reserved for special notice in subsequent issues. The volume closes with a full report of the proceedings of the Congress, banquets, receptions, etc.

FIRST INDUSTRIAL DIRECTORY OF PENNSYLVANIA—1913. Bureau of Statistics and Information, Harrisburg, Pennsylvania; 1914. [Octavo, 778 pages, paper covers.]

This volume, as its name implies, is a directory of the industrial establishments in the State of Pennsylvania, to which are added the boards of trade, business men's associations, chambers of commerce, manufacturers' associations and miscellaneous societies, and also the labor organizations. The general industrial establishments are divided under 15 headings, according to the nature of the occupation. There are some 75 names under general rubber goods. Of this number 8 are manufacturers, the others being wholesale distributors or branches of manufacturers in other States. It is obvious that this volume must prove most useful to anyone who wishes to increase his business relations with commercial interests in Pennsylvania.

RUBBER TOYS IN AMERICA.

By a German Toy Expert.

GERMANY has exported to the United States during the last four years toys to an average value of from seven to eight million dollars. Adding to this the very large quantities which are now being produced in this country, it is easily seen that the amount spent every year for toys in America must be a very large one. Rubber is not playing a conspicuous part in this trade; in fact, neither American nor German statistics go very deeply into this branch of the trade. An inspection of the stocks of the large stores during the Christmas holidays showed that no great interest was taken in the sale of rubber toys. Some of the largest New York concerns were showing only a small selection, of the cheaper description, while others apparently did not seem to trouble at all about them and were offering them at the regular rubber goods counters. There is, further, the interesting fact that most of the rubber toys sold in New York are to be had at the retail drug stores. In fact one of the best selections of rubber toys can be seen in one of these stores whose name has become a household word in retail drug distribution. In a certain way this seems to indicate that the buying public regards the rubber toy as an article of sanitary value which can be given to children without any risk to the health or the welfare of the child.

And this very feature—the absence of danger in the use of rubber toys—makes them especially suitable for very young children. The child cannot hurt itself or others with the toy, which can be easily cleaned without any injury to its appearance.

It seems, however, that no great effort has been made to propagate the sale of rubber toys. In consequence, their sale in the United States is possibly smaller than in any other country. Toy traders in general do not seem to view the article with great favor, but there are concerns outside New York which seem to be able to dispose of very considerable quantities. The demand is mostly for the red or gray article, although there is a limited sale in colored goods. The buying public seems to distrust highly colored rubber, possibly fearing that the color will come off and injure the health of the child. Quite apart from the fact that no manufacturer would allow the use of poisonous or injurious enamels in the production of this article, there is of course to be taken into consideration the extra cost of the colored article, for enameling must be done carefully to give good and reliable results. I hear that at least one of the large concerns selling in this market is receiving orders for colored rubber toys. The German manufacturers find that they have added largely to the selling possibilities of their product by introducing expensive and artistically colored novelties. They are selling now fairly large quantities of this article ranging in retail price up to $4.00.

The average retail price of red and grey rubber toys in this country is about 25 cents to one dollar. More expensive goods of course are sold, but the bulk of the trade is done in this line, which represents, generally speaking, about the same class of rubber toy manufactured in and exported from Germany. Rubber toys are produced by a number of German manufacturers, but only two have really made a study of their production and have created any large number of designs. Competition outside Germany has been comparatively small, and in consequence those two firms have gained something like a monopoly of the trade. Of course there are a number of markets which are now closed to German activity. These markets are open to the American and English manufacturers who care to enter the field. Among them Australia and Canada may be mentioned. There is no doubt that when the war is ended German manufacturers will find their business in those markets seriously curtailed.

In neutral markets the following points will have to be considered: When the war broke out most of the orders on hand had been completed but were not shipped. These could not be cleared during the mobilization, but after about four weeks ordinary goods trains began to run again and it has been possible to ship most of the goods ordered. Taking into consideration that about one-sixth of the world's market has been closed to German enterprise, it follows that quantities of the toys manufactured are still on hand. There will be a surplus supply, even though all shipments reach their destinations. This seems actually to be the case, and the stocks in hand of the foreign agents are said to be fairly large. In addition there might be a tendency to sell cheap, which, however, is counterbalanced by the increased freight rates which had to be paid by the German manufacturers, rates having in some cases doubled since the outbreak of the war. There has been no prohibition of the export of rubber toys from Germany, and neither England nor any of the other countries have shown objection to the shipment of these articles. On the other hand, the government has practically taken over the whole production of rubber goods in Germany for war material purposes, and no rubber is available for the manufacture of any other goods, quite apart from the fact that the increased price of rubber would make them too expensive to compete.

With Germany, France, Belgium, Austria and Russia out of competition, only England would remain of the European rubber manufacturing countries which could satisfy the demand for rubber toys if such a demand should arise in the near future. But it is very doubtful whether English rubber manufacturers will care just now to go into practically a new line which would require a good deal of attention and outlay before it could be successfully established. Only the United States manufacturer seems to be qualified for the task. It remains to be seen whether the manufacture of rubber toys will be regarded by the American producer as large enough a proposition to be handled.

A new compound for injection into tire tubes to prevent punctures is being introduced. It is called "Purple Wonder." [Schutt Bros., Homestead, Florida.]

In toy making factories paint is applied to wooden toys by a pneumatic spray attached to a rubber tube.

New Rubber Goods in the Market.

"RUB-STEEL" PLIERS.

HERE is a cut illustrating "Rub-Steel" Pliers, a safety device valuable in handling high voltage wires. The pliers are first treated by an electro-chemical process which places on the metal a coating in sympathy with rubber and by which a chemical union is secured during vulcanization so strong that it is claimed the rubber will break before the adhesion is disturbed.

These pliers have withstood tests of 13,000 volts, when wet, without breaking. The rubber covering is about one-eighth of an inch thick and in addition to its electrical resistance, insures a better grip and less liability to accidents from dropping. (Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.)

SANDERS' SANITARY MILK BOTTLE CLOSURE.

The above title gives an accurate if somewhat condensed description of the article illustrated below. A full and complete description would contain the further information that this closure is made entirely of rubber. It is a rubber cover that fits over the top of the milk bottle, gripping it so closely around the neck as to be air-tight in any position, thus protecting the contents of the bottle from outside unsanitary influences. Expansion of the contents due to freezing has been duly considered in the design of this cover, the efficiency of which is preserved under such circumstances, owing to the elasticity of the rubber. The manufacturers state that not only is the flavor of the milk not affected by this rubber closure but that it prevents affection by any other article of food near which the bottle may be placed. It can be sterilized in boiling water and will last for a long time, and, being of soft rubber, it is easily slipped on and off the bottle. [United States Bottle Closure Co., Chelsea, Massachusetts.]

THE AMERICAN WASHER.

This is a new washing machine which operates on the vacuum principle. In size and general appearance it resembles the ordinary clothes wringer, and the illustration shows it attached to the laundry tubs in the same way that the ordinary wringer is attached. This machine has two rubber rolls, turned by a hand crank, and the surface of each of these rubber rolls is covered with suction cells. The clothes to be washed are soaked for a half hour or more in warm, soapy water, after which they are passed back and forth, as in a wringer, between these vacuum rollers, until all the dirt has been drawn out by the rubber suction cells, of which there are 131 in each roller. The operation is then repeated in rinsing, bluing, starching and wringing processes. An automatic tension device adjusts the machine instantly to changing conditions, and it is said to be suitable alike for washing the most delicate fabrics and for blankets, etc. (American Washer Co., New York.)

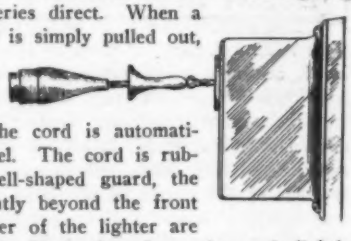
RUBBER IN THE KITCHEN SINK.

A soft rubber tip on the hot water faucet in the kitchen sink represents that rare combination—economy and convenience. With faucets thus protected there is decidedly less chance of dishes being broken or chipped, and the dish washer can realize all the joys of her occupation without the exercise of constant care in this direction. The illustration shows such a tip applied to an ordinary faucet.

A rubber cap of this sort has just been placed on the market which contains within it a number of sieves to strain the water, and which is intended also to prevent splashing in the sink. This cap can be taken off and washed with a brush.

AN ELECTRIC CIGAR LIGHTER FOR AUTOMOBILES, ETC.

Here is a cigar lighter that no wind will blow out and that the automobilist or yachtsman may avail himself of without even the necessity of producing a match box from his pocket. It is an electric device in a case about 3¼ x 3 x 2¼ inches, made in both flush and non-flush types, a side view of the latter being here shown. Inside the case is a reel which carries 40 inches of cord. The device is connected with the lighting circuit or with the batteries direct. When a light is desired the cord is simply pulled out, when the end of the lighter develops sufficient heat to light the cigar. When released the cord is automatically rewound on the reel. The cord is rubber-insulated, and the bell-shaped guard, the socket that extends slightly beyond the front of the case and the cover of the lighter are made of hard rubber. The illustration shows the cord slightly withdrawn, but when not in use the hard rubber guard is drawn into the case as far as the vulcanite socket will permit, and the lighter depends from the small length of loose cord. [Electric Automatic Cigar Lighter, 556 West Twenty-seventh street, New York.]



THE "PERFECTION" PEDAL PAD.

The two illustrations below show one of several forms of pedal pads of a new design on which patent is pending and which are being manufactured in sizes and styles suitable for every make of automobile. These pads, which are molded from rubber, have deep corrugations in their upper surface, to prevent the feet from slipping, and are said to cause less tension and strain than the metal pedal. A feature of this pad, and one which is very likely to insure it popularity with the automobilist, is its ease of attachment to the pedal. As will be noted, metal prongs project from the steel frame that encloses the rubber pad, and to apply the pad to the pedal these prongs are simply bent back over the frame. [Auto Pedal Pad Co., Incorporated, 794 Seventh avenue, New York.]

The Fisher rim-grip sub-casing is a new casing for use under the regular tire. It is made of rubber-impregnated fabric, such as is used in all pneumatic tires, of varying numbers of layers—depending on the size of the tire—vulcanized together. [The Western Auto Sub-casing Co., Inc., Los Angeles, California.]

WATERPROOF BAGS.

Waterproof bags are now made and sold in some variety, and the demand increases as their usefulness is recognized. A certain large store in a western city is said to have recently greatly stimulated sales in its children's department by giving a rubber-lined school bag to each purchaser of a pair of children's shoes. Another useful bag is the one shown in this small cut. It is a Mothers' Bag, the outside being of leather and the inside consisting of a removable rubber-lined bag. It has an outside milk bottle pocket, and the top is closed by a silk draw string. The handles are of leather, large enough to slip over the arm. (Sears, Roebuck & Co., Chicago.)

IMPROVED PASSENGER ELEVATOR LOCK.

This lock was designed to prevent rope-operated elevators from being started from another floor while taking on or letting off passengers. The shipper rope running through the lock is equipped at each floor with buttons that engage the finger pull in the lock and stop the car level with the floor, saving unnecessary starting and stopping of the car. As long as the finger pull is thrown forward the buttons prevent starting.

The improved passenger lock has all the advantages of similar devices, with the added one of being noiseless. The sound of the buttons striking against the lock and jaws in the passing of the elevator up and down is eliminated by the insertion of a thick rubber bushing in the bell of the lock through which the shipper rope passes. The buttons themselves are furnished with thick rubber bushings. These absorb all noises and make this improved lock suitable for hospitals, hotels and all places where noises are especially undesirable. [Angell Elevator Lock Co., Boston.]

A NEW FOUNTAIN SHAVING BRUSH.

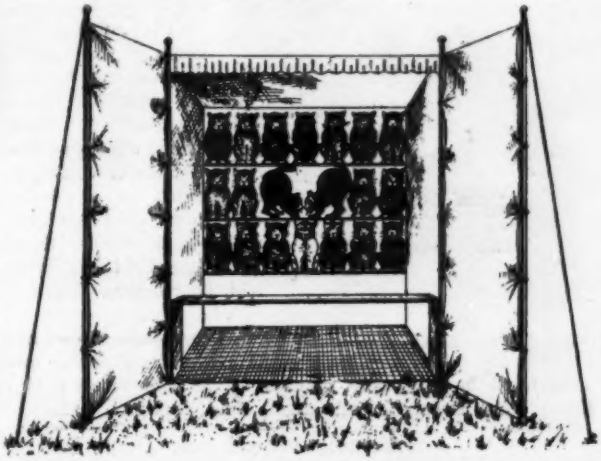
The accompanying illustration shows an interior view of the new Fesler sanitary fountain shaving brush. It is described as a "renewal specialty" because the cartridge through which the soap is supplied and which contains a sufficient quantity for fifty or more shaves, is renewable. As will be noted, a flexible rubber tube extends through the center of the brush well toward the end of the bristles. This rubber tube opens and closes automatically, and through it the soap is emitted from a non-refillable glass container or cartridge. The bristles are set in hard rubber, and the rubber tube extends so far toward the end of the brush as to enable the user to get the full benefit of the soap, at the same time preventing it from sticking to the base of the bristles. [Fesler Sales Co., Trenton, New Jersey.]

A new leak-indicator for use in locating leaks in underground pipes depends for tightness of connection when attached to water orifices on a soft rubber insert or gasket. [H. W. Clark Co., Mattoon, Illinois.]

A rubbert insert has been adopted by one of the proprietary medicine companies to take the place of the cork insert hitherto used in the metal screw cap on medicine bottles.

RUBBER AT THE AMUSEMENT RESORTS.

An entirely new ball-throwing game has been devised, known as the Automatic Moving Ball Rack. It is 10 x 7 feet in size and has 18 dolls mounted on an endless chain moving across the face of the rack, operated by a motor or small engine. Two heads appearing above the back fence have



extra large faces, made of rubber. The dolls move continuously in one direction and are automatically re-set when knocked over, but the rubber-faced heads move in both directions.

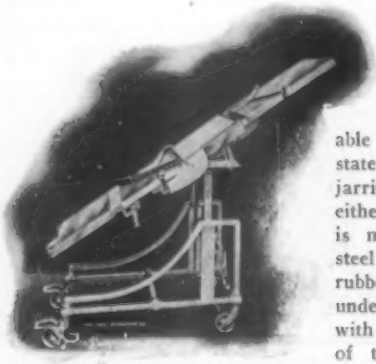
Another new device of the same nature is the Cat Rack, an illustration of which is shown. The cats are made of heavy rubbered canvas and stuffed so that they resemble the genuine feline. Casey's Flats is a similar amusement apparatus, the windows of the flats being occupied by figures which it is the object of the player to knock over; while yet another is the "Mutt and Jeff" rack.

Everybody knows the old ball-rolling games popular at Coney Island and other seaside resorts and generally presided over by young Japanese gentlemen, where prizes are awarded according to your proficiency—or luck—in rolling a certain number of balls into certain numbered holes in a table alley. A game of this sort called the "Devil's Bowling Alley," has just appeared which calls for a ball composed in part of rubber. The wooden portion of this ball is in one piece, and each ball has a numbered rubber slide concealed within it and held in place by a spring. In the cut shown the slide is opened by inserting the thumb nail under one end and pulling it back. Another ball is made with a small button in the side which, when pushed, releases the rubber slide. These balls are kept constantly rolling on the alley. When you have paid the required fee you are provided with a three-pronged fork and, having selected the ball likely to secure you the most desirable prize, you proceed to spear it as it passes you. This accomplished, the prize in the prize rack which corresponds in number to the number on the rubber slide in the ball is awarded.

New devices of rubber appear from time to time to remove at least the undesirable risks from games of chance. The rubber poker chip appeared some time ago, and now comes a rubber mat with billiard cloth cover for dice shaking. This mat reduces the noise and, being made with a rim, protects the dice from falling on the floor; so that crap as well as poker can now be indulged in without danger of detection from the noise of rattling ivory.

DR. FRENCH'S CHAIR TABLE.

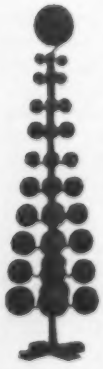
Doctors have discovered that certain surgical operations can be performed with less loss of blood and less strain on the operating physician with the patient in a sitting position, and this had led to the invention of the operating device illustrated. This invention can be used in an upright position and is capable of conversion—it is stated without the least jarring or vibration—into either a table or chair. It is mounted on a tubular steel frame which has large rubber-tired wheels, those under the head end fitted with floor brakes. The top of the table is made in three sections, covered with nicalloy, and the center section has a corrugated rubber mat to keep the patient from sliding forward when in an upright position. [The Kny-Scheerer Co., 404-10 West Twenty-seventh street, New York.]



WATERPROOFS FOR THE SICE.

Waterproofs are now quite popular garments with the sice or male attendent of the Far East, and the two illustrated herewith give an idea of the styles most liked. One is a cape, with two buttons at the throat to hold it over the shoulders, and the second, intended for a groom or driver, is in regular straight coat style. Both are made of white vulcanized wigan sheeting of reliable quality to withstand the climatic conditions of that section, absolutely waterproof, and with all seams sewn. [Whiteaway, Laidlaw & Co., Limited, Kuala Lumpur, Federated Malay States.]

THE "HANSA" BALL RACK.



This is a device, invented and patented in Germany, for use in displaying rubber balls. It is a stand about 3 feet high having an upright metal center from which arms extend in various directions. Each of these arms ends in a ring, into which the rubber ball fits. The rack has ten tiers of these rings or hollow ball seats, in graduated sizes for balls of various diameters, as shown in the illustration. [J. Marx, Bottrop, i. W., Germany.]

TWO NEW SOLES.

The manufacturers of "Indestructible" rubber and combination soles, made in a wide variety of styles, in red, white and black, for all lines from children's to men's, have introduced a new feature. This is a leather toe tip, which is vulcanized to the sole. [New York Belting & Packing Co., 91-3 Chambers street, New York.]

The "Bantam" is a new light weight rubber sole. It is claimed that it possesses durability, flexibility and elasticity equal to soles of heavier construction, while all unnecessary weight has been eliminated. It is made in black, tan, gray and white. [Plymouth Rubber Co., Canton, Massachusetts.]

THE NASDCO HELMET.

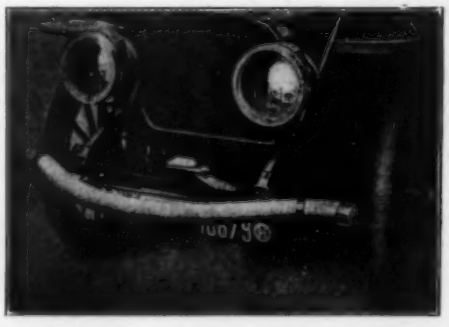
The Nasdco Breathing Helmet is a protective device, the purpose of which is to prevent the wearer from inhaling noxious gases, fumes or smoke, and naturally adapted to fire fighting purposes.

The helmet, consisting of a head piece and mask provided with openings for eyes, mouth and nose, has attached to its base a trailing rubber feed hose through which air is inhaled, there being always pure air near the floor. An opening in the top of the helmet provides for exhaling. The helmet weighs only 3½ pounds and requires no adjustment, neither does it interfere with the vision or hearing of the wearer or the full use of his hands and feet. [The National Safety Device Co., Cleveland, Ohio.]

THE ELASTIC SAFETY BUMPER.

This is a new automobile fender, the purpose of which is to protect both the pedestrian and the automobile should the two collide. The term elastic is applicable because it is composed in part of a hollow rubber tube which extends across the front of the automobile, supported on a steel fender, beyond which it projects about 2 inches. It affords safety to the pedestrian because of the elastic properties of this rubber tube, which serves as a buffer between him and the steel bumper. Beside which, this rubber tube takes up most of the shock and thereby prevents damage to the front of the car, the lamps, etc. The fender is easily attached to the car, and is fitted with an improved spring device. It is supplied in various metal finishes, and the rubber buffer can be stained and varnished in any color desired. [Douglass Manufacturing Co., 32 Broadway, New York.]

The accompanying illustration shows another fender made up of steel and rubber. The straight portion of the fender is a resilient strip of steel trussed to the curved member in front. This curved part has also a steel spring and carries on the front edge a rubber cushion 2½ inches in diameter. By this means, collision shocks are absorbed partly by the rubber bumper and partly by the flexible steel parts, which are supported on the front end of the car frame. [Auto Cushion Fender Co., Columbus, Ohio.]



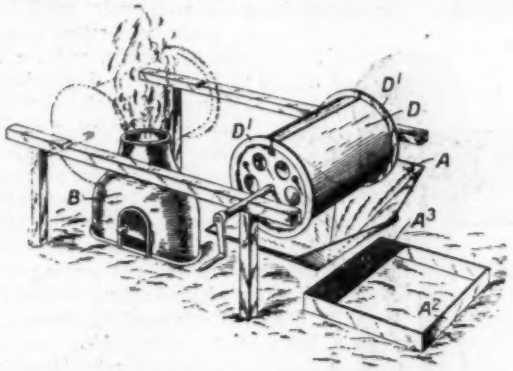
AUTOMOBILE WITH RUBBER BUMPER.

The Kaufman Rubber Co., Limited, is adding to the electrical equipment of its plant at Berlin, Ontario. Certificate of incorporation was issued to this company January 25, its capital stock being $2,000,000 in $100 shares.

New Machines and Appliances.

COAGULATING LATEX.

RUBBER latex is smoke cured by repeatedly performing the following operations: Pouring latex on the external surface *D* of a drum to give a complete but thin coating thereto; rotating the drum to distribute the latex evenly, and thereafter subjecting the coated drum, while rotating it, to the action of smoke. The drum may also be smoked previous to being coated with latex, and after coagulation the outer surface may be smoothed by rolling upon a board. In the form shown, the flanged aluminum drum is built of readily separable parts, namely,—a sheet *D* with inturned ends clamped to a distance-piece, thus forming a V-shaped groove for the knife used for removing the sheet, and end plates D^1. Surplus latex, caught in a pivoted receiver *A*, may be poured into a dish A^2 fitted



with a strainer A^3. The film of latex is coagulated over a smoke-producing apparatus *B*. [F. Ripeau, British patent, No. 21,771.]

ATTACHING SOLES BY VULCANIZING.

THE sole is vulcanized to the shoe by the heat and pressure of a flexible metal surface. In the illustration the figure on the left shows a longitudinal section and that on the right a cross section. The metal surface is composed of a series of chains placed one beside the other and held at both ends by perpendicular screws *b*, which project through a common head-

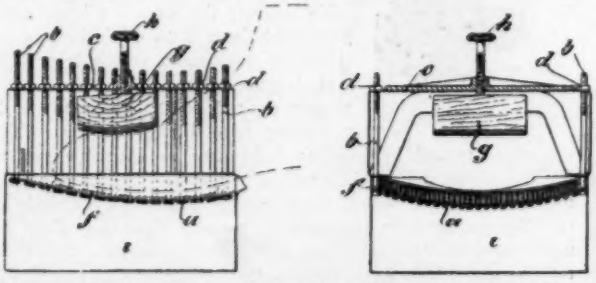
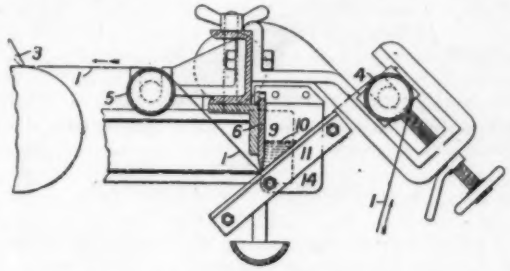


plate *c*. These screws are adjusted vertically by nuts *d*. The last, with the shoe and sole, is placed under pressure block *g*. The sole rests on a gauze packing *f*, laid over the chains to distribute the pressure and prevent cutting the sole. The screws *b* are then adjusted, pressing the chains tightly against the soles. Pressure block *g*, adjusted by the hand screw *h*, holds the shoe in place. Chamber *i* is heated by a gas burner or by placing the apparatus on a stove. [F. A. Antoni, German patent, D. R. P., No. 280,763.]

FABRIC IMPREGNATING MACHINE.

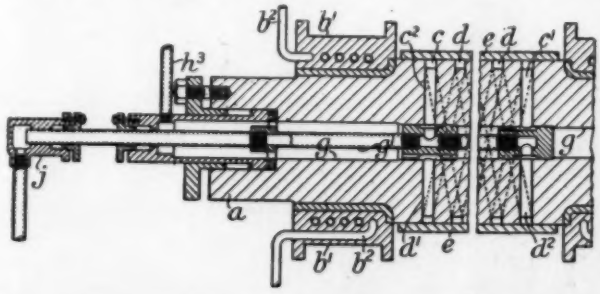
FABRIC is sometimes impregnated with rubber solution before being proofed. In the apparatus illustrated, fabric (1) passes over an adjustable roller (4) and a fixed roll (5) to the usual spreading machine (3). Between the rollers (4, 5) is a doctor (6), which depresses the fabric into a pocket (9) in which rubber solution (10) is placed. The rubber solution



is prevented from running out at the sides by guards (14), carrying pivoted angle-plates (11), which are adjusted to support the edges of the fabric. A plain or ribbed roller may be placed in the pocket (9) to bear upon the fabric and open the interstices. [W. A. Higham, British patent, No. 20,471.]

HEATING OR COOLING MIXER ROLLS.

THIS invention relates to rolls for mixing rubber. A casting *a* is formed with surface grooves *c* covered by a thin shell *e* for the circulation of heating or cooling fluid. It also

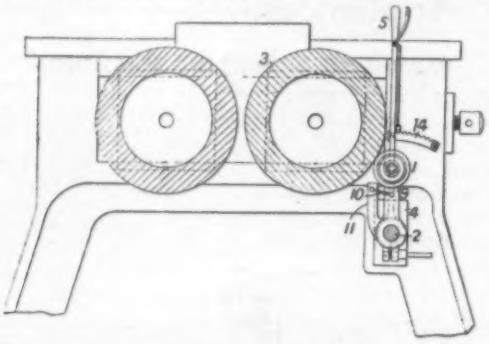


has one or more pairs of helical grooves *c*, *d*, whereby fluid can be circulated from both ends of the cylinder; also the bearings b^1 have coils b^2 for the circulation of heating or cooling fluid. Fluid is supplied through a pipe h^3, whence it flows through a central cavity *g* and ports c^3, d^3, into the grooves *c*, *d*, and passes away through outlets c^2, d^2, into a pipe g^1, leading to an outlet *j*. The fluid may be supplied from either or both ends of the cylinder. [C. H. Gray, British patent, No. 21,001.]

STRIP-CUTTING DEVICE.

STRIPS of rubber or rubber compounds, used in the manufacture of tires, are cut on a calender or warming mill by a series of disc knives (1), adapted to engage the material as it passes over a roll (3). Each knife (1) is carried by an arm (9) adjustably mounted on a shaft (2), journaled in bearings (4) which permit of a ready removal of the shaft. The arm (9) loosely engages the shaft (2), and is connected by a spring

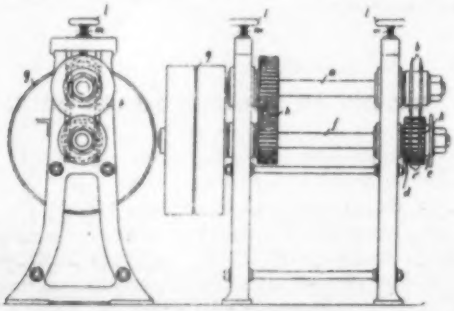
(10) with an arm (11) adapted to be rigidly clamped to the shaft. A lever (5) carried by the shaft (2) is provided with



a lock working over a toothed quadrant (14) to secure the cutters in the required position relative to the roll (3). [J. Rushmer, British patent, No. 22,008.]

A GERMAN BEAD TRIMMER.

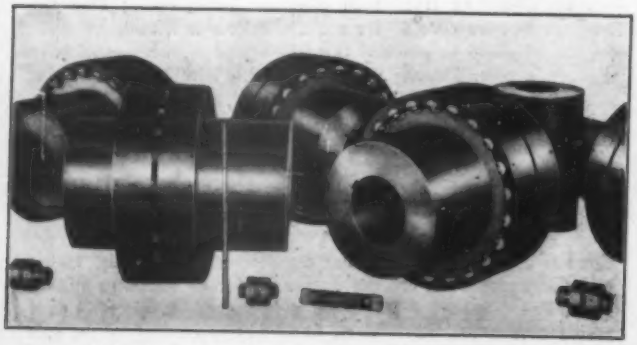
A FRONT view of the machine is shown in the illustration. On shaft *a* are the cutting discs *b*. These engage channels *c* of drum *d*, which has additional channels for receiving the beads. Drum *d* is keyed to shaft *f*, which is driven by belt



pulley *g*. Shaft *a* is driven from shaft *f* by gears *h*. Grooves *k* in drum *d* feed the tire to the cutting discs. The cutting discs *b* are adjusted by hand screws *m*. [O. Meir, German patent, D. R. P., No. 280,897.]

THE FRANCKE FLEXIBLE COUPLING.

THIS is simply an ordinary flange coupling connected by flexible instead of rigid bolts. The flexible pins are made of tempered steel leaves, held at each end by a keeper, which



prevents their getting loose or lost, and makes of each pin a flxible bolt.

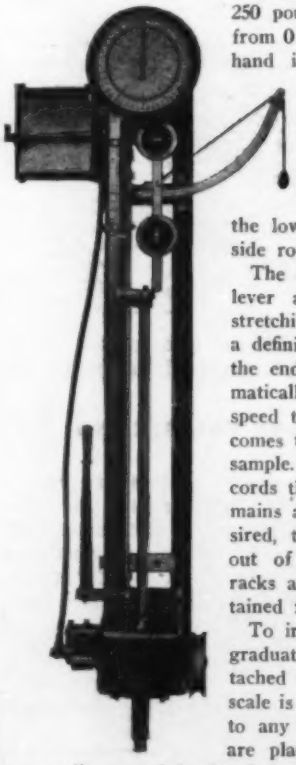
The keepers are slotted at each end to engage spring rings, which also fit in a groove in the coupling flanges. They hold the leaves in a radial position for driving, and also hold the keepers stationary in the coupling flanges.

All the leaves except two short ones at each end are slotted. The short ones are held stationary, making all movement come on the tempered steel leaves. The slotted leaves, of which there are hundreds, do the driving and distribute the work over a large area of hardened steel. The slots allow the coupling to adapt itself to any misalignment. When running, the leaves act similarly to the leaves of a carriage spring and with equal reliability and certainty of long wear. [The Smith-Serrell Co., Inc., New York.]

A NEW RUBBER TESTING MACHINE.

THIS machine is built according to United States standards and on the dead weight principle. Two heavy iron frames support the machine, which is about 7 feet long. It is attached to the wall to avoid floor vibration and is driven by a 1/6-horsepower motor.

The head of the machine has a dial with two rows of figures.



The outer graduations range from 0 to 250 pounds, by pounds, and the inner from 0 to 50, by fifths of pounds. One hand indicates on both circles the amount of stress required to break the sample. On the swinging lever are two weights, the upper being fixed and the lower removable. Delicate tests are made by removing the lower weight and reading the inside row of graduations on the dial.

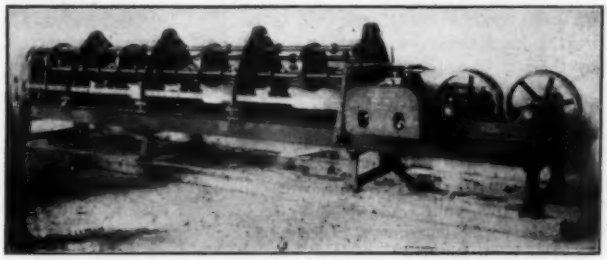
The test is started by means of the lever at the left, which causes the stretching screw to move downward at a definite speed without revolving. At the end of the stroke the tester automatically reverses and returns at high speed to its normal position, where it comes to rest ready to receive another sample. The pointer on the dial records the amount of the break and remains at that point until reset. If desired, the locking pawls may be held out of engagement with the toothed racks and an oscillating movement obtained for friction tests.

To indicate the stretch a brass scale graduated from 0 to 48 inches, is attached to the frame at the left. The scale is adjusted up to bring the 0 mark to any desired point. Upon the scale are place two sliding pointers, which are easily moved by hand to follow marks upon the sample. To the lower pointer is attached a special flexible tape in a round metal case which automatically winds and unwinds as the distance between the pointers varies. This tape gives the net stretch between any two marks on the sample. Near the tape at the left is an automatic registering or charting device designed to hold a standard size letterhead on a flat platen by means of two rubber covered rolls. The break and stretch is recorded in ink on this sheet, which is then placed in a typewriter to receive further data for record. Several tests may be recorded on the same sheet to demonstrate variation in different samples. The movements of this recording mechanism are automatically begun when the starting lever of the machine is operated and automatically stopped when the machine is reversed. (Henry L. Scott & Co., Providence, R. I.)

A NEW STRANDING MACHINE.

BELOW is an illustration of a stranding machine that has recently been placed on the market. It will be of interest to manufacturers of insulated wire, as it is capable of much higher speed than machines of this type previously built.

This machine makes the bare copper strands, and also lays up insulated wires or strands into cables. It has 7 reels, taking spools 7 to 9 inches in diameter and capable of running at



800 r. p. m. The large machines take spools up to 32 inches in diameter, while smaller ones are built for making fine wires, running as high as 1,300 r. p. m. Two-head tandem machines are built with 7 and 12-reel sections; also single-head machines with as many as 19 reels in one section.

These machines are accurately balanced and equipped with ball bearings, and the main bearing and driving gears are enclosed in oil tight cases. [New England Butt Co., Providence, Rhode Island.]

OTHER DEVICES.

ADAMSON COLLAPSIBLE CORES: Adamson has patented a core with a locking ring that can be used on the other side of the core when the flanges become worn. The four hollow segments, one of which is wedge-shaped, are aligned by interlocking keys and grooves. The locking ring is channeled to fit the core flanges, and wedges the segments of the core into perfect alignment, these being held by two conical pointed set screws. On the inner surface of the locking ring there is a V-groove for supporting the core on the chuck. [A. Adamson, United States patent No. 1,124,381.]

A later patent covers a core with fixed locking keys and locking bolts, operated by conical pointed set screws. There are no loose parts, all being located within or attached to the four segments of the core. The abutting ends of the segments are recessed to receive a broad, flat key, which is attached to one of the segments. In the opposite segment are recessed spring bolts with slots that engage the lower lips of the keys. Headless set screws with conical points engage the conical recesses in the bolts. The segments are assembled and aligned by the keys. The set screws being loosened, the spring bolts engage the keys. The set screws are then tightened, drawing the segments together. Dowel pins are inserted through the flanges at the joints, and the core is ready for the casing. [A. Adamson, United States patent No. 1,125,431.]

WICKHAM'S LATEX COAGULATOR: This invention distributes and coagulates, by smoke, films of latex on the inner surface of a circular revolving trough. The trough is attached to a spider mounted on the end of the main shaft, which is journaled to the frames and driven by a hand wheel or belt pulley. The outer side is open and has two sliding partitions for isolating the smoke from the lower part of the trough. It is entirely enclosed by a casing with the exception of three openings—one through which the latex is fed, another for the pipe which conveys the smoke from the furnace to the upper part of the trough and a third for removing the rubber. The drum is rotated and the latex is delivered from a receiving tank to the inner surface of the drum by a reciprocating trough. The films of latex, carried around by the rotating cylinder, are hardened by the smoke. [H. A. Wickham, United States patent No. 1,126,327.]

BELT-MAKING MACHINE.—It makes multiple-ply belting from a strip of material which is marked, cut, folded and stamped by the machine. The parallel side frames form a long wide table with lower cross braces which support the longitudinal driving shaft. Bolted to the top of the side frames are upper parallel frames which carry the feed rollers, cutter and spool shafts, folding, stamping and doubling devices. The belting strip from the roll of material is passed over the table, which has adjustable bars for guiding the edges. Stylographic devices mark the lines along which the strip is to be slit and the material is finally rolled up at the end of the machine. The roll is then transferred to the upper frame and the material passed between the feed roller and cutting discs that cut the filler strips, which are then wound up on spools. The wrapping strip and the fillers are passed between feed rollers and through a device which folds the wrapping strip over the fillers in longitudinal alignment with the center of the belt. A printing cylinder stamps the identifying mark on the belt before it passes between the final feed rollers out of the machine to the finishing table. A belt of half the width is made by passing the folded material through the doubling trough and presser rollers mounted in front of the feed rollers. [A. D. Wright, United States patent No. 1,123,459.]

MORSE SILENT DRIVE CHAIN.

THE chain drive has a number of marked advantages. It has the positiveness of drive which is the characteristic of gearing and at the same time the possibility of running at a high speed without the extremely disagreeable noise that attends the gear drive. It also has the advantage of greater

flexibility. The silent chain consists of stamped links pivoted together into a multiple chain. It runs with a smooth action and is not affected by stretching, for when stretched the chain merely rides higher on the sprockets. The accompanying illustration shows an 85 horsepower Morse silent chain driving a compressor from gas engine. [Morse Chain Co., Ithaca, New York.]

News of the American Rubber Trade.

THE UNITED STATES RUBBER CO.'S ANNUAL MEETING.

THE following notice was sent out February 5 by the secretary of the United States Rubber Co. relative to the holding of the next annual meeting, which will take place in March:

"Notice is hereby given that the twenty-third annual meeting of the stockholders of the United States Rubber Co. will be held at the principal office of the company, in the city of New Brunswick, New Jersey, on Tuesday, March 16, 1915, at 12 o'clock noon, for the election of directors and for the transaction of any and all business that may properly come before the meeting, including considering and voting upon the approval and ratification of all purchases, contracts, acts, proceedings, elections and appointments by the Board of Directors or the Executive Committee since the twenty-second annual meeting of the stockholders of the company, on March 17, 1914, and of all matters referred to in the twenty-third annual report to stockholders, which will be sent to stockholders before the meeting, and in the proceedings of the Board of Directors and the Executive Committee which, until the meeting, will be open to examination by stockholders of record during business hours at the New York office of the company, 1790 Broadway."

FEDERAL COMPANY DEVELOPMENTS.

The Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, has now under way extensions and improvements to its plant which are expected to cost approximately $500,000 and which when completed—probably by July 1—will enable the company to double its present tire output. New second preferred stock to the amount of $1,000,000 has recently been issued to take care of this development, which includes also the establishment of branch offices and sales campaigns in sections of the country where the company is not now represented. The plant is said to be operating at present twenty hours a day, with a force of 1,200 operatives. With the completion of additions it is expected that about 400 additional employes will be taken on.

FIRE HOSE CONTRACTS.

The following are a few of the large contracts for fire hose that have recently been awarded by the fire departments of various cities: Boston Woven Hose & Rubber Co., Boston—2,000 feet—Pasadena, California; Empire Rubber & Tire Co., Trenton, New Jersey—2,800 feet—Detroit, Michigan; Eureka Fire Hose Co., New York—13,000 feet, Philadelphia—2,800 feet, Detroit—500 feet, Pensacola, Florida; Gutta Percha & Rubber Manufacturing Co., New York—400 feet—Detroit; Republic Rubber Co., Youngstown, Ohio—1,000 feet, Pasadena—750 feet, Madison, New Jersey.

Bids have been submitted on 40,000 feet of hose, in addition to tire and tube equipment, for the New York City fire department.

NEW PRESIDENT FOR WHITMAN & BARNES COMPANY.

The Whitman & Barnes Manufacturing Co., of Akron, Ohio, with branches at Chicago and St. Catherines, Ontario, which, in addition to manufacturing rubber hoof pads, distributes all varieties of mechanical and other rubber goods, recently held its annual meeting, when the following officers were elected: President, A. B. Rinehart; vice-president and general manager, A. D. Armitage; second vice-president, A. G. Hall; treasurer, W. H. Eager; assistant treasurer, E. A. Fisher; secretary, W. E. Rowell. C. E. Sheldon, who has been connected with the company for forty-seven years and has been president for the last thirteen years, although retiring from that position, retains his membership in the board of directors, of which he is chairman. Mr. Rinehart, the new president, has been connected with the company since 1893.

ELASTIC FABRIC MANUFACTURERS COMBINE.

An announcement received early in February, signed by T. Martin & Bro. Manufacturing Co., Chelsea and Lowell, Massachusetts; Hub Gore Makers, Boston and Brockton, Massachusetts; Leolastic, Bayonne, New Jersey, and Bridgeport Elastic Fabric Co., Bridgeport, Connecticut, states that the properties of these concerns have been sold to Everlastik, Incorporated, an organization formed to carry on the business formerly conducted by them.

Everlastik is a Massachusetts corporation with an authorized capital stock of $4,900,000, divided between preferred "A" $1,000,000, preferred "B" $2,000,000 and common $1,900,000. No new capital has been brought into this concern, which is simply a combination of interests. Its purpose is to minimize waste, to improve the quality of products if possible, and to more acceptably serve customers. None of the concerns are to lose identity or individuality, and goods will continue to be billed in the names of the separate concerns. The new company will maintain a New York office at 346 Broadway, and a Boston office at 179 Lincoln street.

The officers are: President, Bertram T. Martin; vice-president and counsel, John Abbott; treasurer, John E. Page; secretary and clerk, Walter L. Martin; assistant general manager, Charles B. Stretch; assistant treasurer and clerk, Wilwyn Herbert. The foregoing officers, with Samuel Lownds and Herbert S. Blake, compose the board of directors, of which the latter is chairman.

FISK RUBBER CO.'S GOOD SHOWING.

The report of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, for the year ending October 31, recently issued, shows an increase of $335,604 in net profits over those of the previous year, and an increase in surplus of $229,725. The net profits for the year are given as $942,204, and the surplus as $432,204. Preferred stock dividends were paid during the year to the amount of $350,000. The Fisk company on December 31 retired 2,250 shares of its matured preferred stock, and a new preferred issue of 5,000 shares at a par value of $100 has been voted. It is understood that the proceeds will be applied to the working capital, the present rate of production and expected increases calling for large reserves.

CAPITAL STOCK CHANGES.

The American Tire & Rubber Co., of Akron, Ohio, has reduced its capital stock from $500,000 to $250,000.

The Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, has increased its capital stock from $2,000,000 to $3,000,000.

The Tire Co. of America, of Chicago, has increased its capital stock from $5,000 to $10,000.

The Johnstown Rubber Co., of Johnstown, Pennsylvania, has increased its capital stock from $25,000 to $100,000, and will erect a factory.

The I. T. S. Rubber Co., of Elyria, Ohio, has increased its capitalization from $100,000 to $115,000.

DIVIDENDS

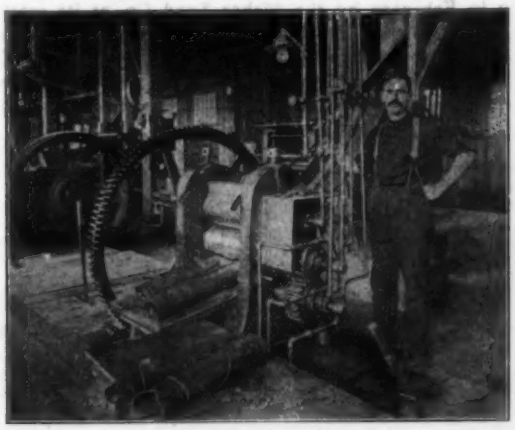
The Republic Rubber Co., of Youngstown, Ohio, paid on February 1 a quarterly dividend of 2 per cent. on common stock.

The Manhasset Manufacturing Co., of Putnam, Connecticut, which specializes in the manufacture of tire fabrics, has declared a semi-annual dividend of 3 per cent. in place of the usual 2 per cent.

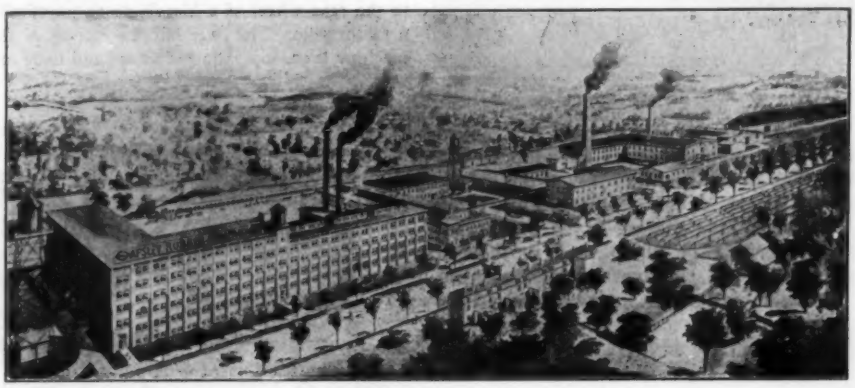
WHAT THE APSLEY COMPANY HAS DONE IN THIRTY YEARS.

THE Apsley Rubber Co., of Hudson, Massachusetts, was established 30 years ago this year. The Honorable L. D. Apsley was its first president and treasurer and still retains these positions. Like some of the other important American rubber enterprises, the Apsley company started in a small way. Its entire original plant consisted of two small rented wooden structures and the amount of capital was also small. Now the company is capitalized at over a million dollars and what its present plant looks like may be seen by referring to the accompanying cut. It is not only a capacious plant, but a thoroughly modern one, equipped with the latest types of machinery and supplied with electrical motive power.

MILL ROOM.



CALENDER IN MILL ROOM.



PLANT OF THE APSLEY RUBBER CO.

At the beginning its output was not only small but was quite simple in its character, but with the progress of years this product has not only vastly increased in volume but has increased also in variety. The simple styles of waterproof clothing made in 1885 have developed into the varied kinds of mackintoshes and rainproof garments now sent out from the Apsley factory, and several lines of heavy rubber surface clothing have also been added.

The manufacture of rubber footwear has become the largest feature of this business. The company now makes three distinct grades of footwear. One is known as the "Deliverer" line. This consists of heavy footwear made particularly for policemen and letter carriers, who, being on their feet all day, in all the varieties of weather that our American climate produces, naturally need footwear that is constructed for hard usage. Another well-known brand manufactured in this factory is called the "Rock Hill" line, specially made to withstand contact not only with oils and ammonia but with sharp projecting objects such as miners encounter in their work. Though the past season, owing to weather conditions, has not

MAKING ROOM.

OPERATIVES MAKING CHINESE SHOES.

been a banner one in the sale of rubber footwear, the Apsley company has continued running on a full ticket.

PICHER LEAD CO. HOLDS FOURTH ANNUAL CONVENTION.

A convention of the sales force, department heads, engineers, operators of mining properties and chemists, was held early in February by the Picher Lead Co. at its works at Joplin, Missouri. The convention lasted for three days, terminating on February 11 in a banquet at which O. S. Picher, the president, was toastmaster. R. W. Evans, of Chicago, treasurer of the company, in a convention address,

REPRESENTATIVES OF THE PICHER LEAD CO.

stated that while ten years ago the Picher Lead Co. ranked fifth as a producer of lead pigments, it is now the second largest concern of its kind in the country. All of the output —which is marketed in Canada, Mexico, England, France and Russia, as well as in the United States—is the product of plants in the Joplin district. The photograph reproduced above shows the assembled representatives, standing in front of and on a stack of refined pig lead estimated at about 1,500 tons.

TRADE NEWS NOTES.

The Werner & Pfleiderer Co., which manufactures machinery of all kinds for rubber mills, has moved its New York offices from 1031 Tribune building, at 154 Nassau street, to 41 Park Row.

The Mexican Crude Rubber Co. is remodeling its brick factory building at Detroit, Michigan.

About 50 of the electric light companies in Canada have united in forming the Canadian Electrical Association, for the co-operative purchase of supplies. This action is expected to result in lowering the cost of maintenance and of rates to the consumer, and also in a standardization of supplies.

The Newcastle Rubber Co., incorporated in January with a capital stock of $500,000 for the manufacture of automobile tires and tubes, has secured a factory building 80 x 340 feet in area at Newcastle, Pennsylvania, where machinery is now being installed. Manufacturing operations will probably commence about April 1.

An announcement, dated February 25, has just been received to the effect that James C. Baldwin and Louis W. Dumont have formed the partnership of Baldwin & Dumont, to carry on a brokerage business in crude rubber and gums, with offices at 68 Broad street, New York, and in the Second National building, Akron, Ohio.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A firm in Europe which deals in dentists' supplies is in the market for gutta percha and other dental necessities. Report No. 15,420.

A business man in the Near East wishes to establish commercial relations with American manufacturers of machinery, rubber goods, etc. Report No. 15,450.

A business man in Russia wishes to secure names and addresses of firms in the market for old rubber goloshes, also the price being paid. He states that he can deliver from 300 to 400 tons a year. Correspondence should be in Russian or German. Report No. 15,664.

A business man in Denmark is in the market for large quantities of rubber tires suitable for automobiles and bicycles. Report No. 15,696.

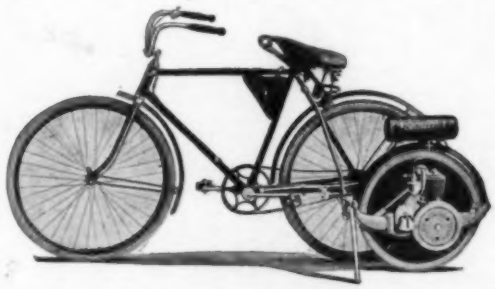
A business man in Italy desires to get in touch with American firms manufacturing rubber shoes, with a view to representing them in that country. Report No. 15,703.

An Italian merchant requests names and addresses of American exporters of rubber goods. Report No. 15,712.

A South American importer wishes to be placed in touch with manufacturers of rubber goods, especially for chemical and toilet purposes, such as tubes, nipples, sponges, etc. Report No. 15,719.

TURNING A BICYCLE INTO A MOTORCYCLE.

A motor wheel has been devised which can be readily attached to the rear wheel of a bicycle so as practically to convert it into a motorcycle. The only effort required of the rider to start the machine is pushing the pedals around once or twice as is done in



a motorcycle. This wheel, which is only 20 inches in diameter, contains a one-cylinder, four-cycle, air-cooled motor specially designed for the purpose, which develops one full horsepower. The tire is a heavy double tube pneumatic clincher motorcycle tire, 20 x 1⅝ inches, with non-skid tread. [A. O. Smith Co., Milwaukee, Wisconsin.]

THE NEW FIRM OF H. J. HALABURT & SONS.

The firm of H. J. Halaburt & Sons, manufacturers and dealers in rubber goods, 36 South State street, Chicago, is a new one, but Mr. Halaburt is by no means new to the rubber business. He was connected with the Chicago Rubber Clothing Co. for 30 years, joining that company when a young man, in the capacity of factory shipping clerk, with particular charge of the gossamer department, when gossamers were the chief item in rubber clothing. He then spent 21 years as the company's representative on the road, and during the last 5 years, until he left to form the new company, he was general manager of the Chicago office.

Mr. Halaburt has associated his sons with him and expects in his new business to manufacture and deal in rubber clothing, particularly slip-ons and balmacaans, and rubber sheeting. He expects for a time at least to have quite a proportion of his goods manufactured for him by the best clothing and sheeting makers in Chicago and in the east.

THE NEW HOME OF THE L. J. MUTTY CO.

Announcement was made in the January issue of this publication of the removal of the L. J. Mutty Co. from 91 Federal street, Boston, to very much larger quarters at 175 Congress street, that city. Here is a reproduction of the Mutty company's new home. It is a fine modern building equipped with excellent

elevator service and, as the picture shows, generously lighted. The Mutty company occupies the fourth and fifth floors of this large building.

This company was incorporated January 1, 1909, with a capitalization of $125,000. Increased business compelled a rapid increase in the company's capitalization, which was doubled in 1910, increased to $350,000 in 1911 and to $400,000 in 1912. The company manufactures a wide variety of rubber cloths and tubing, especially the better grade carriage cloth. A very large business is also done in tubing for player pianos. The officers of the company are: L. J. Mutty, president and treasurer; John B. Mutty, vice-president; F. H. Brown, assistant treasurer; Robert R. Gurney, secretary.

A "TWO MINUTE" TIRE RIM.

A new tire rim has been invented and patented by F. J. Demareth, of Milwaukee, Wisconsin, to manufacture and market which a company is now being formed in that city. This rim, which is to be known as the "Two Minute" quick detachable clincher tire rim, is simple in operation. It is in two parts, one the rim proper and the other an outside flange. The flange is connected with the wheel by means of six lugs and bolts, which can be removed with the fingers. In changing tires these lugs and nuts are slipped off and the flange comes easily. The tire is then slipped over the rim, the flange replaced and the nuts put back. The inflation of the tire causes the nuts to hold securely.

LARGE INCREASE IN MOTOR-TRUCK EXPORTS.

In December last the value of motor trucks exported from the United States was more than double the total value of all such trucks exported in the whole of the year 1913. The figures for last December, as reported by the Department of Commerce to the National Automobile Chamber of Commerce, are: 1,279 commercial automobiles, valued at $3,387,729, as compared with 88, valued at $100,660, exported in December, 1913; and 1,009, valued at $1,686,807, exported in the twelve months of 1913.

Passenger cars exported last December numbered 1,297, worth $998,698, bringing the total motor vehicle exports for the month to 2,576, valued at $4,386,427, as compared with 2,389, worth $2,152,144, in 1913, and 2,013, worth $2,060,812, in 1912.

TRADE NEWS NOTES.

The Republic Rubber Co., of Youngstown, Ohio, has proposed to its stockholders a new stock issue, the proceeds from the sale of which are to be devoted, to the amount of $2,500,000, to the retirement of present outstanding preferred stock which matured in September, and to the cost of necessary additions to the plant.

The McNaul Tire Co., whose tires have in the past been manufactured by one of the Akron tire companies, is now operating its own plant, on Miami street, Toledo, Ohio.

The Goodyear Tire & Rubber Co., of Akron, Ohio, has closed an arrangement for the handling through its branches of the "Invincible" tire gage, made by The United States Gauge Co., of New York.

At the annual meeting of the Universal Rim Co., held at Chicago on January 11, E. K. Baker was elected president.

The Hood Tire Co., recently incorporated under the laws of Massachusetts, will carry on the manufacture of tires for motor vehicles hitherto done by the Hood Rubber Co. as a part of its business. It will be conducted as a distinct organization.

A factory site has lately been purchased by the United States Wheel & Tire Co. at Rockton, Illinois.

The Henderson Tire Co., of Buffalo, New York, has filed certificate of dissolution.

The Standard Tire & Rubber Manufacturing Co. is planning the erection of a $25,000 addition to its factory at Willoughby, Ohio.

The Chemical Rubber Co., of Chicago, has filed a voluntary petition in bankruptcy.

The property of Joseph Gordon, scrap rubber dealer, of Trenton, New Jersey, was sold at auction in that city on February 3. A. S. Kuhn bought most of the scrap rubber offered, at a price of $6,500.

The Alliance Rubber Co., of Alliance, Ohio, at its recent annual meeting elected the following directors for the current year: Robert Auld, Milton Bejach, H. F. Bohecker, Simon Brady, M. S. Milbourn, W. H. Purcell, George C. Russell, J. C. Shively and A. W. Thomas.

The Endurance Tire & Rubber Co., whose principal office is at 1789 Broadway, New York, has just closed a contract for the erection of two new factory additions to its plant at New Brunswick, New Jersey. One of these is to be 35 x 37 feet, and the other a building 80 x 252 feet.

The Falls Rubber Co., of Cuyahoga Falls, Ohio, has purchased an unoccupied factory in that city and will remodel and equip it for the manufacture of tires.

The action of Congress in eliminating from the Post Office Appropriation Bill the clause providing for aeroplane service disposes of published reports to the effect that such a service is to be established between Kansas City, Kansas, and Kansas City, Missouri, and intermediate sub-stations.

A Board of Standardization is being organized at St. Louis, Missouri, by which it is hoped to effect a saving in the purchase of city supplies. The Supply Commissioner expects to save at least 15 per cent. on tire purchases for the city's 59 automobiles, the tire equipment of which during 1914 cost $12,000.

The Detroit (Michigan) Board of Commerce offers a prize of $500 for the best "Made in the U. S. A." trademark. It must include space for the name of any city, giving it a local as well as a national importance. John H. Patterson, president of the National Cash Register Co., Dayton, Ohio; James Keeley, editor of the Chicago "Herald" and Joe C. Lydendecker, the American artist, have been requested to act as judges in the contest.

The Polack Tyre & Rubber Co., has leased a store at 10 West Sixty-second street, New York—the rear portion of the second floor and 7,500 square feet of basement.

PERSONAL MENTION.

F. H. Peaty has opened an office at 38 Vesey street, New York, where he will engage in the crude rubber business. This is a line with which Mr. Peaty is quite familiar, for, with the assistance of Samuel Kubie, then a member of Kubie, Herman & Co., he founded the Raw Products Co., one of the leading crude rubber concerns of the city, and continued active in the affairs of that company until two years ago, when he retired because of ill health.

William Perrett has been appointed Detroit branch manager of the Republic Rubber Co., of Youngstown, Ohio. Mr. Perrett is not only thoroughly acquainted with the tire business, having had 20 years' experience in this field, but is equally familiar with the trade of Detroit and vicinity. He is prominent in Masonic circles, being Grand Master for the State of Michigan, and Potentate of the Shriners at Detroit. His headquarters will be at 1001 Woodward avenue.

E. O. Hoopengarner has recently associated himself with the McGraw Tire & Rubber Co., of East Palestine, Ohio, in charge of special work in New York City, where he was previously in charge of a branch of the Swinehart Tire & Rubber Co.

F. H. Meggett, well known in the New England footwear trade, is now representing the Enterprise Rubber Co. in Rhode Island and Connecticut, carrying Candee and Federal lines of rubber boots and shoes.

William A. Inwood, for many years connected with The Rubber Regenerating Co. in the capacity of New York City representative, with offices in Grand Central Terminal building, recently severed his connection with the company, which has discontinued its New York office. The affairs of the Regenerating company will be administered from the Naugatuck plant. Mr. Inwood and his wife have left for California, where they will spend several months.

E. R. Branston, special representative of The B. F. Goodrich Co., of Akron, is now making a trip through the Far East, where he expects to spend about six months, visiting Ceylon, the Malay States, Java, Sumatra and parts of India and Africa.

Horace C. Pratt, for several years president and general manager of the Amsterdam Rubber Co., one of the wholesale footwear distributing houses of the United States Rubber Co. in New York, has removed to Cleveland, Ohio, where he has assumed the management of the Adams & Ford Co., engaged in similar distribution.

A. A. Templeton, for the past 16 years connected with Morgan & Wright, has resigned from that concern to become president of the Detroit Seamless Tubes Co.

Herbert A. Githens, vice-president and sales manager of the Federal Rubber Manufacturing Co., of Milwaukee, is spending a six weeks' vacation at Jamaica and other Southern points.

B. H. Weibel has been appointed manager of the Firestone Tire & Rubber Co.'s Cincinnati branch.

H. J. Woodward, of the Knight Tire & Rubber Co. sales force, has been transferred from the Boston office to the branch at 215 West Fifty-first street, New York.

J. M. Ward, for the past two years a factory representative of the United States Tire Co., has been appointed manager of the branch at Indianapolis, Indiana.

C. D. Studebaker has been promoted from a position as salesman for the Firestone Tire & Rubber Co. to the management of the New York branch.

Thomas O'Callaghan, Jr., has been appointed manager of the Empire Rubber & Tire Co.'s branch at 240 West Fifty-fifth street, New York, succeeding J. B. Todd, whose recent resignation terminated seven years' association with the company.

COMMODORE BENEDICT MAKES A RESCUE AT SEA.

Commodore Benedict, who sailed on his yacht, the "Oneida," on January 2, for his usual midwinter cruise in southern waters, rescued the crew and eleven passengers from the dismantled sloop "Southern Cross" early in February. He towed the sloop into Monserrat, Leeward Islands.

TWO LIFE SAVERS GONE TO THE WAR.

Readers of New York papers will recall the wonderful feat of life saving that occurred off Sandy Hook last winter, when the oil tanker "Oklahoma" buckled and broke and the Booth line steamship "Gregory" rescued five of the crew. This rescue was effected only after an exhibition of daring rarely witnessed. The wreck occurred during a terrific storm, and the crew from the ill-fated tanker were struggling to save themselves on an overturned life boat. They were being swept by the "Gregory" when two of the officers—Second Officer J. S. Williams and Third Officer F. D. Roberts—leaped into the water, with their heavy clothes and sea boots on, and pulled the exhausted men to the life lines. Five out of the crew of eleven were saved in this way. These two officers, Williams and Roberts, known to many rubber men who have visited the Amazon, have joined the British army.

KEMPSHALL TYRE CO. REDUCES CAPITAL STOCK.

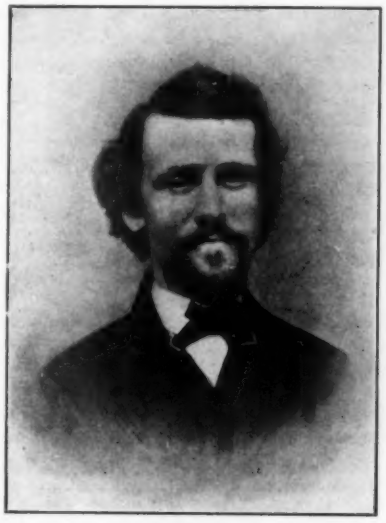
The Kempshall Tyre Co. of Europe, Limited, has reduced its capital stock from £175,000 to £2,400, the application for this reduction explaining that the original vendor sold patents at a large price and £120,000 had been written off these patents. The company was registered in London in December, 1906, with an authorized capital of £45,000, to adopt an agreement with Eleazar Kempshall to acquire certain patent rights relating to automobile tires and to carry on the manufacture of tires, Mr. Kempshall to be a director so long as he should hold shares to a value of £20,000.

Eleazar Kempshall is an American, well known to the rubber manufacturers in this country because of his many inventions and patents relating to rubber. In the July, 1902, issue of this publication mention was made of 77 patents, with 874 claims, that had up to that time been granted him on golf and other balls, and many others were later allowed him on similar inventions. He also invented a golf club, to thoroughly protect which would involve 76 patents comprising 863 claims. Other of his inventions were the Kempshall hose band, illustrated on page 150 of THE INDIA RUBBER WORLD of February, 1893, and the Kempshall non-skid tire shown on page 363 of the issue of July, 1909. His first patents here were assigned to the Kempshall Manufacturing Co. He later withdrew from that company, becoming interested, in this country, in the Perfect Golf Ball Co. and the Kempshall Tire Co. He recently assisted in organizing the Globe Golf Ball Co., incorporated on January 13 of the present year, under the laws of Delaware, to make and sell golf balls and rubber or gutta percha articles.

ON A "SEA-GOING" MATTRESS AT PALM BEACH.

MR. BERTRAM G. WORK.

THE foundations of the Goodrich company were laid by Dr. B. F. Goodrich and Alanson Work. The former was an energetic creator of the promoter type, the latter a practical, clear-headed factory organizer with genuine mechanical genius. It was natural, therefore, that the present head of the company, Bertram G. Work, after his graduation at Harvard, should take an interest in the company for which his father had done so much, and in which he was a large stockholder. He began at the bottom, and, in course of time, became superintendent. As a persistent worker few of the scores of enthusiastic young men that made up the Goodrich staff were in his class. He was at the factory often before light, and stayed far into the night. He studied men and methods, created machines, experimented and organized, and his associates, recognizing his loyalty and ability, gave him a free hand. His vacations were spent in Europe, visiting and comparing notes with the leading rubber men in England, Germany and France.



ALANSON WORK.

BERTRAM G. WORK.

Dr. Goodrich passed away; H. C. Corson retired; and when Col. Perkins gave up the presidency of the company, then growing great, Mr. Work of necessity took the reins. Under his leadership the company has continued and continues to expand.

Always interested in golf, he recognized the value of the rubber-cored ball when it was but a crude beginning. He financed the Haskell company, perfected the ball, and incidentally saw to it that the inventor was abundantly rewarded, and that the Goodrich company profited largely.

His ability to recognize capacity, and willingness to accord to rivals their due meed of appreciation, brought him into close friendship with Arthur H. Marks when he came so wonderfully to the front in building up the Diamond Rubber Co., and it was largely his influence that eventually brought both Mr. Marks and the Diamond into the Goodrich fold.

Personally, Mr. Work is sturdily built, fond of horseback riding, golf and travel. He is not much of a talker, is never outwardly enthusiastic, but fond of his friends and absolutely indifferent to his enemies—if he has any.

MR. DAVOL TO HAVE A MODEL YACHT.

The yacht designed by A. L. Swasey for Charles J. Davol, president of the Davol Rubber Co., of Providence, which is being built at Robert Jacobs' yards at City Island, New York, is nearing completion. It will be a notable addition to the pleasure craft of the coming season. It is built of steel. Its general dimensions are 120 feet over all, 118 feet 6 inches on the waterline, 14 feet 4 inches extreme beam, 4 feet 9 inches draught and 8 feet 9 inches depth of hull, with a speed of 20 miles an hour. Power will be supplied by two of the largest size Winton motors. The accommodations are large and roomy for a yacht of the size, including owner's stateroom and several guests' staterooms, besides very spacious accommodations for the crew. The yacht also has a large cruising capacity of gasolene and water.

AN AMERICAN RUBBER PLANTER IN MEXICO.

George M. Havice, an American, formerly a resident of San Francisco and lately of Playa Vicente, Mexico, vice-president and general manager of the Playa Vicente Rubber & Development Co., Inc., recently submitted to a special correspondent of the New York "Herald" an affidavit sworn to before the American consul at Veracruz, containing a brief statement of indignities and atrocities perpetrated by Mexican soldier bandits, with Americans and other foreigners, as well as respectable representatives of their own race, as the victims. Mr. Havice states that he has lost everything on his plantation, the bare land alone being left him, and that may be confiscated any day. He describes raids made upon his plantation, in one of which five men, calling themselves "Villistas," demanded, under threats of shooting, 3,000 pesos (about $1,500). As he had only 300 pesos, they took that, returning later to demand 4,000 pesos more. On being told that he did not possess this amount, he was struck over the head with their revolvers, knocked down, bound with a rope and dragged around the room. He states this is not unusual treatment and is only a small part of the things that many Americans are now suffering in Mexico.

MR. IVINS ON THE GERMAN VIEWPOINT.

Mr. William M. Ivins, who for several years was president of the General Rubber Co., contributed a half-column letter to the New York "Times" of January 29 on the attitude that Germany has maintained for a number of years past in regard to some of her smaller neighbors. He quotes from an article on Holland and Germany that appeared in "Die Grenzboten" in 1902, in which the writer, referring to Holland, makes this statement: "Her guaranteed neutrality is no more than a scrap of paper, which would prove worthless in war," then going on in an attempt to prove that Holland's only rational course was incorporation with the German empire. The particular interest of this article lies in the fact, as discovered by Mr. Ivins, that the expression "scrap of paper" as referring to international guarantees was used in German publications twelve years before the breaking out of the war.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NEW INCORPORATIONS.

Chapin-Owen Co., Inc., February 4, 1915; under the laws of New York; authorized capital, $25,000. Incorporators: Charles S. Owen, 91 Clarissa street, Charles T. Chapin, 27 Rutgers street, and Charles H. Chapin, 499 Culver road—all in Rochester, New York. To manufacture sporting goods, auto. tires and accessories, etc.

Chewlaxagum Co., The, February 1, 1915; under the laws of Delaware; authorized capital, $50,000. Incorporators: B. H. Friel, S. H. Burke, and L. S. Dorsey—all of Wilmington, Delaware. To take over and operate the going business of the makers of chewing gum known as "Chewlaxagum."

Delaware Tire & Rubber Co., January 21, 1915; under the laws of New Jersey; authorized capital, $125,000. Incorporators: B. C. Cohn, Newark, Roy J. Harding and W. Eugene Turton—both of Irvington—all in New Jersey. To manufacture, sell, buy, import, export and generally deal in rubber and other tires for automobiles, bicycles, carriages and vehicles of all kinds and descriptions.

Estes Airless Tire Co., January 25, 1915; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Millard F. Amonett, 258 Valley Road, West Orange; Benjamin F. C. Rothwell, 93 Frelinghuysen avenue, and Melchior J. C. Walter, 491 High street—both of Newark—all in New Jersey. To manufacture, sell, import, export and generally deal in inner tubes and tires for automobiles, etc.

Everlastik, Inc., January 22, 1915; under the laws of Massachusetts; authorized capital, $4,900,000, of which $3,000 was then to be issued for cash in full. Incorporators: Herbert S. Blake, 30 Church street; Harry E. Hanes and William Leslie—both of 56 Pine street—all in New York City. To manufacture, prepare, sell, buy, own and deal in any and every kind of textiles and other fabrics, etc.

Eveready Tire & Rubber Co., Inc., January 29, 1915; under the laws of New York; authorized capital, $40,000. Incorporators: Willard J. Woodcock and Frank W. Woodcock—both of 102 Gates avenue, Brooklyn, New York, and Albert W. Norwalk, 720 Riverside Drive, New York City. To manufacture tires, etc.

Globe Golf Ball Co., January 13, 1915; under the laws of Delaware; authorized capital, $100,000. Incorporators: Eleazar Kempshall, Hugher Oliphant, and Henry E. Davis—all of Washington, District of Columbia. To manufacture and sell golf balls and implements of and accessories to the game of golf, and articles composed wholly or in part of rubber or gutta percha.

Globe Rubber Tire Manufacturing Co., February 8, 1915; under the laws of New Jersey; authorized capital, $250,000. Incorporators: Harry B. James, Sherman Square Hotel, New York City; Joseph P. Hall, 60 Hawthorne avenue, East Orange, and Spencer Weart, 273 Washington street, Jersey City—both in New Jersey. To manufacture rubber tires and inner tubes for automobiles and other vehicles or any accessories thereof.

Goodrich Rubber Co., The B. F., January 19, 1915; under the laws of Illinois; authorized capital, $500,000. Incorporators: B. G. Work (president), 15 East Fifty-first street, New York City, and C. B. Raymond (secretary), Akron, Ohio. To buy, sell, repair and deal in rubber goods and accessories. Address of principal office, Detroit, Michigan.

Hammond-Williams Convertible Top Co., Inc., The, February 8, 1915; under the laws of New York; authorized capital, $5,000. Incorporators: John C. Hammond and Aaron Rachofsky—both of 1328 Broadway—and Charles D. Williams, 114 East Twenty-eighth street—all in New York City. To deal in and to manufacture auto. tops, waterproof covers, slip covers, etc.

Hart Waterproof Manufacturing Co., Inc., January 29, 1915; under the laws of New York; authorized capital, $15,000. Incorporators: James I. Hart and James F. Hart—both of 960 Jamaica avenue—and Edward E. Berry, 52 Euclid avenue—all in Brooklyn, New York. To manufacture waterproof auto. slip covers, rubberized goods, etc.

House & Son Manufacturing Co., Inc., February 4, 1915; under the laws of New York; authorized capital, $10,000. Incorporators: James M. Holland, 149 Broadway; Jacob Schreiber, 827 Hunts Point avenue, and Max Levy, 1172 Park avenue—all in New York City. To manufacture raincoats and rubberized fabrics, etc.

Indian Rubber Manufacturing Co., Inc., February 16, 1915; under the laws of New York; authorized capital, $10,000. Incorporators: Bessie R. Bookstaver, 1040 Eastern Parkway, and Nathan Zobler, 716 Third avenue—both in Brooklyn, New York—and Adolph Grauer, 25 East Ninety-ninth street, New York City. To manufacture rubber heels and all kinds of rubber goods.

Kaufman Rubber Co., Ltd., The, January 26, 1915; under the laws of Canada; authorized capital, $2,000,000, divided into 20,000 shares of $100 each. Incorporators: Jacob Kaufman, Milton Ratz Kaufman, Alvin Ratz Kaufman, Mary Kaufman and Emma Ratz Kaufman—all of Berlin, Ontario. To carry on trade and commerce throughout Canada and other countries in rubber and rubber products generally, as importers, exporters and manufacturers. Location of principal office, Berlin, Ontario.

Lambkin Coupling Co., Inc., The, February 1, 1915; under the laws of New York; authorized capital, $10,000. Incorporators: Crighton B. French, 1117 Carroll street, Brooklyn, New York; Charles H. Lambkin and George H. Lambkin—both of 615 West One Hundred and Forty-third street, New York City. To manufacture hose couplings, rubber hose, etc.

Lastic-Air Manufacturing Co., Inc., The, February 10, 1915; under the laws of New York; authorized capital, $20,000. Incorporators: Oswald M. Mackie, Ethel M. Mackie and Allen T. Steward—all of Niagara Falls, N. Y. To manufacture auto. accessories, tire goods, etc.

Lesser & Co., Inc., Maurice, January 14, 1915; under the laws of Massachusetts; authorized capital, $60,000. Incorporators: Maurice Lesser, 8 West Thirteenth street, New York City, and Alexander I. Stoneman and Alexander G. Gould—both of 610 Pemberton building, Boston, Massachusetts. To manufacture and deal in men's, women's and children's raincoats, overcoats, rubberized goods and kindred articles.

Midgley Tire Sales Co. of New York, Inc., The, January 28, 1915; under the laws of New York; authorized capital, $50,000. Incorporators: William B. Wilson and Eliza T. Wilson—both of 69 West One Hundred and Thirtieth street—and George H. Wilson, 60 Beaver street—all in New York City. To deal in the products of the Midgley Tire & Rubber Co. of Lancaster, Ohio, having for its territory New York State east of Syracuse, New Jersey north of and including Mercer and Monmouth counties, and the State of Connecticut.

Mussinan Tire Corporation, February 15, 1915; under the laws of Delaware; authorized capital, $3,000,000. Incorporators: Samuel B. Howard and H. O. Coughlan—both of 36 Nassau street, New York City—and James M. Satterfield, Dover, Delaware. To manufacture, buy, sell and deal in automobiles, bicycles, carriages and vehicles of all kinds made of metal, rubber and other materials.

Triplex Inner Tube Co., January 30, 1915; under the laws of Maine, authorized capital, $200,000. Incorporators: Horace Mitchell (president), H. A. Paul (treasurer), and Horace Mitchell (clerk)—all of Kittery, Maine. To manufacture and deal in inner tubes and all automobile accessories.

TRADE NEWS NOTES.

The Ajax-Grieb Rubber Co., of Trenton, New Jersey, has enlarged its New York branch, now occupying, in addition to its old quarters in the Ehret building, a recently-vacated store adjoining these, at 1798 Broadway.

The Firestone Tire & Rubber Co., of Akron, Ohio, since the outbreak of the war, has opened branches in London, Australia and South America.

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, is represented in Minneapolis and surrounding territory by the Northwestern Tire Co.—S. F. J. Kerner, manager—at 622 Third avenue, Minneapolis. The Philadelphia branch of the Lee company has moved from 324 to 660 N. Broad street.

The Double Seal Tire Valve Co., Inc., has been organized with sole rights to manufacture and market a new double seal tire valve. The company has been incorporated under the laws of Delaware, with a capital stock of $150,000, its principal office at the present time being located at 1790 Broadway, New York.

The Peerless Tire & Rubber Co., of Toledo, Ohio, has removed to larger quarters at 713-15 Jefferson avenue.

The Divine Tire Co., Inc., of Utica, New York, organized in March, 1913, with a capital stock of $225,000, has filed a petition in bankruptcy.

The Hamilton Rubber Manufacturing Co. and the American Belting Co., of Chicago, both under the management of Elmer E. Bast, have removed from 169 West Randolph street and are now located in larger and more suitable quarters at 1229-31 South Michigan avenue, in the automobile district.

The claims for reappraisal at 35 per cent., as materials composed chiefly of india rubber, on elastic cords imported by Mills & Gibb and appraised at 50 per cent., have been in some cases upheld by Judge Howell, in other cases the 50 per cent. appraisal being allowed to stand.

A mill and factory for the manufacture of asbestos products will probably be erected in the near future in the vicinity of Casper, Wyoming. Several companies wish to develop asbestos mines on a 640-acre tract of school lands in the Casper Mountains and the state board of school land commissioners refuses to permit such development unless a manufacturing plant is established. Three firms are stated to have tendered applications for the land, expressing a willingness to meet these conditions.

At the annual exhibition of automobiles and accessories in Boston, to be held at the Mechanics Building, commencing March 6, 24 makes of tires are to be on exhibition.

From St. Louis, Missouri, comes a record of unusual tire mileage, one tire—an Arrow tread—made by the Hood Rubber Co., of Watertown, Massachusetts, being reported in use for 17,000 miles on a 7-passenger car, and good for a further 1,000 miles; while another of these tires, on a rear wheel, gave 14,000 miles' service.

The Archer Rubber Co., of Milford, Massachusetts, is equipping its factory with modern fire escapes.

The Chester Rubber Tire & Tube Co., on February 2 resumed operation of its plant at Chester, Pennsylvania, with a force of 20 operatives.

Wisconsin Tire Co. is the title of a corporation organized in Milwaukee, Wisconsin, with $40,000 capital, to engage in the manufacture and sale of automobile tires. The officers of the new company, which will have its offices at 188-192 Eighth street, are: President, Dr. G. A. Bading, Mayor of Milwaukee; vice-president, J. A. Werwinski, South Bend, Indiana; secretary, Louis M. Kotecki, City Controller; treasurer, Joseph P. Carney, City Treasurer; general manager, Fred G. Simmons, City Commissioner of Public Works. The tires the company will make will bear the trade mark "Badger."

A LIVELY THERMOID BANQUET.

The annual banquet of the Chicago forces of the Thermoid Rubber Co. was given under the direction of Mr. J. E. Duffield, district manager, on the evening of January 28, at the Tip Top Inn, in Chicago. Interest in the occasion was increased by the presence of Mr. D. O. Pohlman, the general sales manager of the company, and of Mr. "Bob" Burman, the "world's speed king." There were about 35 present, including prominent members of the Thermoid staff located in western cities and some of the large users of Thermoid goods. The menu is given below, not that it throws as much light upon the actual courses served on that occasion as it does on the general breezy atmosphere that prevailed:

MENU

Burman Gas
Crab Meat De Luxe
Overcured Celery Fully Inflated Olives
Cream of Cement Soup
D. O. Punch
All-Mighty Tough Beef Tenderloin
Stone Bruise Potatoes
Spaghetti a la De Palma
J. E. D. Spirits
Salad de la Thermoid
Folded and Stitched Pie
Hydraulic Compressed Cheese
"Damn" Tessie

THE MANSFIELD TIRE & RUBBER CO.

The Mansfield Tire & Rubber Co., of Mansfield, Ohio, held its annual meeting on January 19, when a 10 per cent. dividend was declared, and the following officers were elected: President, Judge C. R. Grant, of Akron; vice-president and general manager, G. W. Henne; secretary, J. E. LaDow; treasurer, W. F. Henne, of Piqua, Ohio.

The company's plans for 1915 include an addition to the plant which will double its present capacity and the production of from 800 to 1,000 tires and 1,000 tubes per day. A new tire has been added to the line, the word "Ohio" standing out as a tread design on the non-skid casing. This company has just completed an order for 3,000 tires for consignment to an Australian port, the shipment going by way of the Panama canal.

ANNUAL MEETING OF RACINE RUBBER CO.

At the annual meeting of stockholders of the Racine Rubber Co., of Racine, Wisconsin, the total earnings for the year 1914 were reported as $570,000 on sales amounting to $2,400,000. The company has outstanding $733,500 common stock, and $310,000 of 7 per cent. cumulative preferred, and has a surplus of $180,000. Indications, according to the report, are for a large increase in sales during 1915. The following officers were elected: President and general manager, H. L. McClaren—succeeding G. B. Wilson, who has held this office for the past three years, but has given up active interest in the company; vice-president and treasurer, Stuart Webster; secretary and general sales manager, H. C. Severance. These officers are also members of the board of directors, which also comprises L. B. Patterson, Joseph Weissenbach and L. T. Vance.

THE SOUTHERN TIRE & RUBBER CO.

The Southern Tire & Rubber Co., of Augusta, Georgia, commenced operation of its tire factory late in December, with a force of 30 employes, which it expected soon to increase.

This company has recently brought suit against Patrick Armstrong, former president of the failed Irish-American Bank of Augusta, for $21,715.86, this amount representing the net deposit of the Southern company when the bank closed its doors on December 13. The charge is made that Armstrong, who is a large holder of local real estate, knowing the insolvent condition of the bank, transferred his stock in that institution and continued to receive deposits up to date of closing. The Southern Tire & Rubber Co. is the largest creditor.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

EVIDENCE of renewed activity in the local rubber trade was produced February 20, when, for the first time in several weeks, The B. F. Goodrich Co. hung out a "Help Wanted" sign at the factory and advertised in the Akron newspapers for tire finishers. The Goodrich company has been taking on from 200 to 300 new employes each week for the past two months.

Officials of the company and of other Akron companies say that there is now plenty of rubber to supply their needs and that as the tire industry is beginning to show a marked recovery tire production will be rapidly increased. "We are now running at 75 per cent of our capacity," said H. E. Joy, general superintendent of the Goodrich plant, "and we believe the manufacturing situation will see a great improvement. Our tire business has had a large jump in recent weeks and this is necessitating an increase in output. All departments show signs of being benefited by the business revival." According to Mr. Joy, rubber officials are not worried by the German paper blockade and do not believe that it will have any serious effect on the local trade. He added that in the event the Germans succeed in stopping shipments of rubber from England, plans have already been made to ship direct from the plantations.

Akron rubber men were pleased to learn that B. G. Work has been named a member of the committee of the Rubber Club of America which will see that the proper certifications are made in shipments of rubber from the United States. Mr. Work's efforts at London in securing the lifting of the British embargo have given him a thorough understanding of the agreement by which rubber is permitted to be shipped, and his knowledge will be very valuable to the committee.

Stockholders of The B. F. Goodrich Co. will vote on March 10 on a proposed reduction in capital stock of the company. It is proposed to reduce the preferred stock from $30,000,000 to $28,000,000. The retirement of preferred stock, if approved, will reduce dividend requirements and make a larger fund available for a possible common stock dividend in the future. All stockholders of record February 27 will be entitled to vote at the meeting. Goodrich and Kelly-Springfield common have been two of the most active stocks on the market during the past month and holders of Goodrich common in Akron are confidently predicting that it will reach 60 before the end of the year.

* * *

The campaign of education for the benefit of tire users which is being conducted by the Firestone Tire & Rubber Co. is meeting with excellent results and is appreciated by patrons, according to an official of the company.

* * *

Rubber products are being manufactured in England on an enormous scale, according to Frank A. Seiberling, president of the Goodyear Tire & Rubber Co., who returned from that country to Akron February 22. Mr. and Mrs. Seiberling arrived in New York Saturday, the 20th, on the "Lusitania." While in England they purchased fittings for their new home on Portage Path

"English factories are working seven days and nights each week to supply the needs of the allied armies," said Mr. Seiberling. "Freight of all kinds for America and elsewhere is piled mountain high on the English docks. The German blockade may have some effect on shipping between England and America but I do not think it will seriously affect the rubber trade." Mr. Seiberling is well satisfied with the arrangement made with the British government for the lifting of the rubber embargo. He went to London with B. G. Work, president of The B. F. Goodrich Co., who was the official representative of the Rubber Club of America in conducting negotiations for the lifting of the embargo.

According to Mr. Seiberling, London is now a city of marching men in khaki uniforms and people in mourning. The restaurants are darkened, while hundreds of searchlights constantly watch for Zeppelins.

The two-piece rim is to be marketed by the Goodyear Tire & Rubber Co. during 1915. Agencies for Goodyear rims are being established in all parts of the country. The company is also making a special rim for heavy cars.

A circular is being sent out to dealers by this company warning tire users against the danger of overloading tires.

* * *

More than 30 "jitney" busses are now being operated in Akron and the number is growing daily. Tom Faron and Peter Dockerson, former rubber workers, were the first to enter the field here. One woman, Mrs. F. W. Danner, is also operating a bus. Good patronage is reported and the busses are cutting heavily into the receipts of the local traction company.

Motorization of all city fire apparatus has cut the cost of maintenance in half, according to figures compiled by John T. Mertz, chief of the department. It has been more than a year since motor apparatus completely replaced the horse-drawn apparatus in the local department, and although the number of fires during the past year shows an increase compared with the previous year the fire loss shows a decrease. Fire Chief Mertz says that it is due to the facility with which they can respond to an alarm that the fire loss is lower than ever before in the city's history.

* * *

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., has been named as one of the directors of the Chamber of Commerce of the United States. Mr. Seiberling was formerly president of the Akron Chamber of Commerce.

William F. Lawler, Jr., branch manager of The B. F. Goodrich Co. in New York City, was married in Akron, February 15, to Miss Louise J. Seybold.

E. C. Shaw, of the Goodrich company, and A. H. Noah, former treasurer of the Diamond, are spending a few weeks hunting and fishing in Florida. They have chartered a houseboat at Ft. Myer on the east coast.

H. A. Bauman, Goodrich department manager, was elected president of the Akron Rotary Club at the annual meeting in February.

J. S. McClurg, formerly of Akron, is now at the head of the McClurg Rubber Co., of Coshocton, which has taken over the business and reorganized the S. & M. Rubber Co. of that city.

J. W. Moore, driver of a test car for the Firestone Tire & Rubber Co., decided to quit driving rather than pay a $20 fine in police court for speeding. He was given his choice by Judge Vaughan.

Among the social events of the past month was the annual ball of office employes of the Miller Tire & Rubber Co.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

BUSINESS in some lines is better, in others it still lags. The clothing manufacturers claim that last fall's beautiful pleasant weather, widely distributed over the country, has militated against the retail sales and as a consequence against good wholesale orders. There seems to be a better demand for low-priced goods than for finer garments. Tire manufacturers expect a lively season, with prices ruling lower, and now that the embargo is settled and crude rubber is available, they will run their factories to fairly full capacity from now on.

Mechanicals are moderately active. Makers of hose report good demand for the garden and mill varieties, but not for fire department hose. In boots and shoes there is a fair amount of

business at present, all based on guarantee of prices, which will be announced on the day this journal is published. The reclaimed rubber business is not over brisk; naturally the low price of crude interfering with the demand for reclaimed.

* * *

The opening of the new wing of the Boston Museum of Fine Arts, on the evening of February 3, was the culmination of the distribution for the public good of a portion of the wealth left by the late Robert D. Evans. This addition, which in its effect really makes the back of the building the principal facade, greatly enlarges this magnificent museum. Situated on the Fenway, this new front is not only magnificent in itself, but is reflected in the water so as to make an architectural picture rarely equalled in New England.

The front is of Greek architecture. Fluted columns of Maine granite, cut on the Ionic pattern, stand 22 in a close-set row along the 325-foot front. They run from the level of the ground floor 35½ feet to the solid upper wall. Above are three sculptures by noted artists. Each has two figures, and these groups represent Painting, Sculpture and Architecture. The interior is far finer even than the rest of the museum and excellently adapted to the purposes for which it was planned. There is a great hall for tapestries, galleries for paintings, small rooms for etchings and water color exhibits, a lecture hall and a splendid staircase, surmounted by a half-dome with Doric pillars. Here, cut in stone, is a memorial inscription reading:

IN LOVING MEMORY OF
ROBERT DAWSON EVANS
1843-1909
MERCHANT, FINANCIER AND
PATRON OF ART
A TRUSTEE OF THIS MUSEUM
BUILT BY HIS WIFE,
MARIE ANTOINETTE EVANS

Nearly 10,000 persons attended the opening and Mrs. Evans held a reception in one of the large halls.

This is another of the great gifts to the public by Mrs. Evans, who had previously built the Robert Dawson Evans Memorial Building as a branch of the work of the Boston Homeopathic Hospital.

* * *

The manufacture of rubber soles is receiving additional stimulus from the continued high prices for sole leather. Manufacturers of these soles are continually experimenting and improving their product. The latest in this direction is a leather tipped rubber sole. Soles answering this description are made by several manufacturers, and some shoe producers purchase the cut off soles and bevel on a toe of sole leather. The objection to this is that the joint separates with the action of the foot. The new sole has a very flexible leather tip skived and then vulcanized on the sole. It is claimed that this avoids all the troubles caused by the bending of the sole. The same manufacturers turn out a rubber sole with leather reinforcement along the tread of the big toe, where the greatest wear comes in tennis playing or in dancing.

* * *

Competition continues keen in the rubber heel business. One western manufacturer of such goods, the Federal Rubber Manufacturing Co., has put a working force in this city to visit every shoe repairer, to push the use of its rubber heels. A widespread advertising campaign is being run in connection with this canvass.

The latest manufacturing concern to enter the sole business is the C. J. Bailey Co., whose rubber heels already have a large sale. The soles will have an oval space covering the tread of the forward part of the foot, in which will be a design in U-shaped projections or bosses, similar to those in the Bailey heels. These soles will be made in white, red and black rubber and are pronounced un-slippable.

* * *

Announcements have been sent out of the marriage of Horace E. Bailey and Miss Ethel Scannell, daughter of Burt R. Scannell of Beacon street, Brookline, on February 10. Mr. Bailey is the son of C. J. Bailey, the well-known rubber man in this city. He was a student at Cornell previous to entering business with his father. There is an element of romance in this marriage. Mr. Bailey called at the Scannell residence and invited Miss Scannell, whom he had known for some months, to ride in his limousine to the Brae Burn Club to dine. Instead of that they went to the station, thence to New York, and were married at the "Little Church around the Corner." It was a surprise, but in no sense an unpleasant one, to the parents of either bride or groom. They will be "at home" after March 1, at Surrey Road, Newton.

* * *

Some of the local manufacturers of eastern Massachusetts are considerably exercised over a bill now before the Legislature which would make it illegal for freight handlers on the railroads to work after 12 o'clock Saturday during May, June, July, August and September. Such a law would work a hardship to those who could not deliver their freight to the station in time to have it placed in cars before noon on Saturday. This would result in practically two days' delay at the start, and thus freight which should arrive in New York Monday could not get there until Wednesday, and corresponding loss of time would result for all other western receiving points.

* * *

Ira F. Burnham, president and treasurer of the Stoughton Rubber Co., gave an interesting talk on the gathering, curing and importation of crude rubber, and its manipulations in the manufacture of rubber clothing, before the Chickatawbut Club of Stoughton recently. The talk was illustrated with lantern slides depicting the various stages in the preparation of the raw product and the processes of handling the cloth, etc., in making up into garments, the former views being from pictures taken by members of the staff of THE INDIAN RUBBER WORLD, and the latter fully showing the various departments of the Stoughton Rubber Co.'s enlarged factory.

* * *

W. B. Laighton, well known in the rubber footwear trade and for the last fourteen years with the Apsley Rubber Co., occupying the positions of general selling agent and treasurer, has gone with the Hood Rubber Co. at East Watertown, Massachusetts, where he will be connected with the distributing end of the business. Mr. Laighton has many friends in the trade, and has had long and successful selling experience.

THE RUBBER TRADE IN TRENTON.*

By Our Regular Correspondent.

THE Thermoid Rubber Co. is working two shifts of men in an effort to keep up with orders. The day shift works 10 hours and the night shift is on duty for 12 hours. This company has recently installed an additional 250 horse power boiler. A new battery of mixing mills has been placed in operation and a new John E. Thropp tire making machine has been installed. There are now 6 vulcanizers and 4 tire machines in operation. The tube department has been moved to a new building, thus giving the tire department a whole floor. The new mill line is operated by a 300-horse power electric motor. A 100-horse power motor has been installed to operate a new calender line.

J. O. Stokes, president of the Thermoid company, started in February on a three months' trip. He will visit California, also New Orleans and other Southern cities, and will spend some time in Cuba.

* * *

The Delion Tire and Rubber Co. is the latest addition to Trenton's growing colony of rubber manufacturing establishments. This company has begun business in its newly erected factory, a description of which as contemplated appeared in the June, 1914,

issue of THE INDIA RUBBER WORLD. The superintendent and factory manager is A. A. Peterson, a well known rubber man, formerly superintendent for the L. & M. Rubber Co., of Carrollton, Ohio. Mr. Lionel Emden, treasurer and general sales manager, is an automobile tire salesman who knows the business thoroughly. It is really because of an idea of his that the company came into existence.

A feature of the concern's output will be an all white tube. Mr. Peterson exhibited a section of this tubing to a reporter for THE INDIA RUBBER WORLD. The piece had been clamped into a kinked position for a long time yet when it was released there was not the slightest indication of weakening and the most severe test applied failed to disclose a flaw.

It is planned to have an initial output of 50 tires and 50 tubes a day. There is ample provision for rapidly increasing this capacity. The general sales offices will be located on Broadway, New York.

* * *

The Mecca Tire Co. is just getting ready for business in its new Trenton plant. The foundation work for the engines, boilers and other heavy equipment has been placed and the machinery is now being installed. L. T. Layton & Co., of Philadelphia are marketing the shares in this company.

* * *

Two hundred workmen have been added within the past couple of weeks to the force of the Empire Rubber & Tire Co. General C. Edward Murray, president of the company, said in a recent interview that the outlook for the coming season is bright in almost all lines, except that there could be a better demand for mechanical products.

* * *

Scores of laborers are clearing away the debris of the big fire at the Roebling plant. F. W. Roebling states that as soon as new buildings can be erected a strenuous effort will be made to catch up with back orders.

Ferdinand W. Roebling recently donated to the Union Industrial home of this city $20,000, as a permanent endowment fund, in memory of the late Mrs. Margaret G. Roebling.

Superintendents and foremen of the Roebling plant at Roebling, New Jersey, to the number of about 40, held their seventh annual banquet February 10, at the Roebling Inn.

* * *

The Acme Rubber Manufacturing Co. is working full time, with 600 hands. Commencing this month they are working overtime in some departments.

* * *

Articles of incorporation have been filed by the Hyatt Auto Top Co. This concern will deal in rubber and other equipment for automobiles, cars, carriages and boats. The capital stock is $20,000.

* * *

Edward H. Sutterly, who for many years has been one of the department heads of the Vulcanized Rubber Co., at Morrisville, opposite Trenton, has retired from the rubber business to take a position as Postmaster of Morrisville. His former employes have presented him with a valuable gold watch suitably inscribed.

* * *

Rubber manufacturers, especially the tire people, are keenly interested in the fate of a resolution presented in the State Legislature by Senator Hutchinson providing for the submission to the people of a proposed amendment to the State constitution. Among other things the resolution provided that on and after July 6 of this year 50 hours shall constitute a week's work in any factory, shop or other pace where the manufacture of any goods is carried on. The periods of employment shall be from 7 A. M. until 12 noon and from 1 until 5 P. M., every day except Saturday, when work must cease at 12 o'clock noon. Under this section it would be impossible for the rubber companies to work in night shifts, which some of the tire concerns are now doing. The bill has already been favorably reported by committee. Inasmuch as the passage of the resolution would prevent the issuing of morning newspapers and the operation of gas and electric lighting plants, in addition to the other havoc it would work with conditions in general, it is hardly probable that it will ever get by the legislative body.

* * *

It may be interesting to readers of this paper to know that there are 20 rubber factories in Trenton.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THERE has been no cessation in improvement in business conditions among the rubber factories of this state. Practically all of the plants are running on full time, with increasing orders ahead, while some are working extra hours. In consequence, all the competent rubber workers in this vicinity have steady employment, expert operatives being in demand. Weather conditions, combined with the effects of the European war, have resulted in bringing about the most active business situation enjoyed by the rubber industry in a long time. This is conclusively shown by the reports received from all sides. In some places, notably at Bristol, the concerns are even confronted by a labor scarcity problem.

* * *

Colonel Samuel P. Colt, president of the United States Rubber Co. and of the National India Rubber Co., Bristol, in speaking recently to the Bristol school authorities, announced material changes and increases at the plant of the National concern, whereby the number of operatives would be increased by 500 to 1,000, conditional upon the securing of expert workers. At present there are about 2,500 employed in the factory, principally working on the production of lawn tennis shoes and insulated wire. He also stated that he expected that these conditions would be permanent. This is about 100 per cent. increase over the average.

The new force will be employed gradually and it is understood that nearly another 500 will be taken on as soon as the building now under construction is completed and alterations have been made in several of the old buildings. This company is confronted by a serious problem in properly housing so many people and is making efforts to provide living accommodations for the increasing number of workmen and their families who have come into the town. The company's orders have been piling up rapidly, although the plant is now turning out something over 25,000 pairs of tennis shoes daily, which will be increased to a production of approximately 35,000 per day.

To eliminate danger to the employes of the grinding and calendering departments of the factory of the National company, a patent device for instantly stopping the machinery and preventing injury has been installed in several of the sections of shafting in the departments named. In case of accident, a clutch connected with the shafting and operated by an electrical appliance stops the shafting and gears.

* * *

An organization under the name of the United Motor Industries of Rhode Island was formed at the Narragansett Hotel, Providence, on the evening of February 4, by a large representation of automobile, tire and auto accessory dealers and others of this state, who have a common interest in the fact that all sell automobile tires. The organization aims to act as a board of trade for the industry in this state, settling trade questions, unifying practices and bringing into better acquaintance and better agreement the dealers in automobiles and parts.

A preliminary meeting had been held previously, under the auspices of A. M. Bannister, manager of the Providence branch of the Goodyear Tire & Rubber Co., of Akron, Ohio, and S. H.

Beatty, a local salesman. The speakers at this meeting included L. C. Rockhill, manager of the automobile tire division at the Goodyear company's Akron factory; W. T. Teagan, of Boston, New England district manager, and W. R. Bliss, manager of the Boston branch of the Goodyear company.

The new organization begins with a membership of nearly 70 and with officers as follows: President, Albert E. Goodby, of the Goodby-Rankin Co., Providence; vice presidents, Frank F Kellogg, of the Providence Auto Equipment Co., Charles F. Thatcher and William S. Achorn; treasurer, Charles A. Paine; secretary, Henry Corp—all of Providence. Directors: Frank Crook, of Pawtucket; John R. Magee, of Bristol; Bernard Morgan, of Newport; H. L. Capron, of Attleboro; A. B. Smith, of Westerly; L. M. Jackson, G. H. Gifford, Charles R. Manchester, Herbert A. Thayer, John O'Donnell, Frank A. Glover and William Hughes—all of Providence—and William A. Flinn, of Narragansett Pier.

* * *

Nearly 100 of the employes of the Revere Rubber Co. have recently removed to Hartford, Connecticut, owing to the change in plans of the United States Rubber Co., the controlling corporation, whereby each of the different factories will confine its output to one line of goods. The employes who have left here for Hartford are those who have been engaged in making the pneumatic tires of the Revere company. Their places will be taken by employes from the Hartford, and possibly one other, factory of the corporation. All of the pneumatic tires for automobiles will be made at Hartford hereafter. The Revere company will devote its plant to the making of solid tires for trucks and other vehicles and rubber thread.

* * *

Charles J. Davol, president of the Davol Rubber Co., of Providence, was married recently to Lillian Amy Fuller, the ceremony taking place in North Kingstown. Mr. and Mrs. Davol have just returned to their home in Providence from an extended trip through the South.

* * *

Statements just issued by the American Wringer Co. show that the gross earnings for the calendar year of 1914 were $246,233.60, against $299,408.39 in the preceding year. The net earnings for 1914 were $132,975.39, against $160,184.04 in 1913. The surplus on January 1, 1915, was the same as on January 1, 1914, $180,000. This is considered a good showing for a generally poor business year, dividends being kept up and allowances for depreciation being made.

* * *

Oliver Hoyt Blaisdell, for a long term of years chief engineer and master mechanic of the large plant of the National India Rubber Co., and since his retirement a year ago from active labor consulting engineer of the concern, died at his home on Bay View avenue, Bristol, February 20. He had been in poor health for several months and confined to his bed about two weeks.

Besides the important position which he filled so long and well at the factory of the National company, Mr. Blaisdell was a member of the sewer commission of Bristol, having served as such since the sewer system was established in the town a number of years ago. He was a Civil War veteran and served his country as a private in the 42d Regiment of Infantry, Massachusetts Volunteers. He was born at Alton Bay, New Hampshire, February 2, 1843. He removed to Bristol and joined the National company in 1886.

Michael Callan, employed for 40 years in the vulcanizing department of the National India Rubber Co. and retired on pension a few years ago, died at his home in Bristol, February 6, from a complication of diseases, after an illness of several weeks. He was in his 66th year.

* * *

The Consumers' Rubber Co.'s factory at Barrington is being operated under contract by Terence McCarthy, formerly superintendent under the old company. No transfer of the property from the hands of Robert W. Emerson, receiver for the corporation, has taken place, but it is understood that a plan has been perfected for the eventual taking over of the property.

* * *

The International Rubber Co., which manufactures rubber sheetings, at West Barrington, has been made the defendant in a suit for $100,000 damages brought in the Superior Court by the owner of a large oyster bed, who claims that the waste chemicals flowing from this and other factories pollute the waters.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

THE O. K. TIRE CO. is the name of a new San Francisco tire manufacturing concern, formed by Marion F. Oliver, of the Oliver Rubber Manufacturing Co., and Austin Kanzer. It will specialize in the manufacture, to order, of high-grade handmade automobile tires, exclusively for the use of owners of large cars in and about San Francisco, Oakland, etc.; also in tubes, branded with the owner's name for purposes of identification. The tires are made with red side walls and white treads in three styles—the "Touring," the "O. K. non-skid" and the "Hickory" non-skid.

* * *

The Savage Tire Co., of San Diego, has started a campaign for the invasion of the Eastern tire field by opening a branch in Chicago. The Savage tire is made under the direction of A. W. Savage, the man who made Savage firearms famous.

A unique demonstration and test of strength of the Savage "Red Graphite" tube was recently made, when one of these tubes, in connection with a steam roller, was used to tow a street car weighing 26,000 pounds up a 1½ per cent. grade. A 37 x 5 inch tube was used in this demonstration, spools being used to fasten the ends to the car and steam roller, with ropes run through the spools. Engineers of the car company figured that with the weight of the car and the friction developed in turning over the motors the pull on the tube equaled 7 tons. After the test the tube was inflated, and not a rupture, leak or weak place could be found. Pictures showing this novel use of a tire tube were taken by one of the film companies for the "movies."

* * *

The Kelly-Springfield Tire & Rubber Co. branch at San Francisco early in February moved into new quarters on upper Van Ness avenue. These new quarters have a floor area of about 15,000 square feet and comprise, besides offices and sales rooms, storage space for about 10,000 casings and tubes and a well appointed service department.

The Thermoid Rubber Co., of Trenton, New Jersey, has established agencies for its "Nassau" tires in San Francisco, San Diego, Los Angeles and Oakland, California; in Seattle, Washington, and Portland, Oregon. The Schmid-Jeffress Co. and the Tire & Oil Service Co. will handle the line in San Francisco and Peart, Inc., in Oakland.

The Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, has established an agency for its tires with the Spokane Cycle & Supply Co., of Spokane, Washington.

The Automobile Supply Co., of Tacoma, Washington, has added to its line the new Goodrich Silvertown and the Diamond tire.

The Republic Rubber Co. branch at Portland, Oregon, has moved from 233 Burnside street to 71 Broadway.

The tire companies on the Pacific Coast are all preparing for an unusual rush of activity during the spring and summer, the two great international expositions—the Panama-California, opened at San Diego January 1, and the Panama-Pacific, opened February 20 at San Francisco—adding to the inducement offered by the natural attractions of this Western country to visitors from the East.

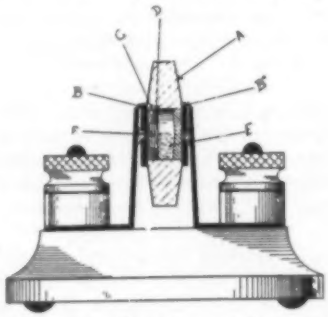
The first motor truck tire shipment made by the United States Rubber Co.'s plant at Providence to its Pacific Coast agencies since the change in manufacturing policy, was shipped by way of the Panama Canal.

A factory is soon to be established at Seattle, Washington, for the manufacture of spring wheels for automobiles, by W. B. Rosenberg, of Corbin, and W. A. Black, of Livingston, Montana.

A NEW DETECTOR.

The drawing herewith shows a new device that is of interest to the wireless man. It is used in connection with the receiving apparatus and enables the operator to detect the wireless signals that are difficult to get.

In this sectional drawing, *A* is a dielectric material made of hard rubber mounted in such a way that it can be rotated in order to adjust it. *BB* are conductors which pass the current. *C* is a conducting material. *D* is an insulating washer and *E* is the finely divided alloy which makes the contact with the sensitive crystal *F*. [Eugene T. Turney Co., 2595 Third avenue, New York.]

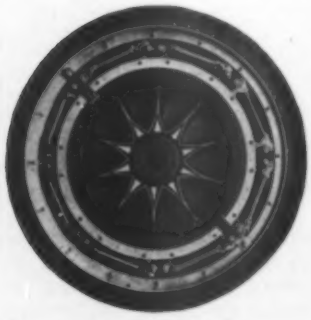


SECTIONAL VIEW OF THE NEW DETECTOR SHOWING THE VARIOUS PARTS.

THE CRAWLEY-BOEVEY TIRE CHAIN.

A non-skid attachment for solid tires is shown in the accompanying cut. To the chain that surrounds the tire, metal rings are attached at intervals. The superiority of this non-skid over the old crossbar type of attachment consists in the fact that the metal grips in suction cup form tend to prevent skidding in any direction. Another advantage is that it is less destructive to the tire, because, as compared with the flat bar, the ring attachment spreads the unavoidable strain over a greater surface. [National Steam Car Co., Limited, London, England.]

THE AIRLESS RESILIENT WHEEL.



The airless resilient wheel is a spring wheel in two parts, namely, the center and a floating rim. The rim consists of a solid rubber tire and two circular discs or grooved plates. The center part is an artillery wheel of wood or metal with six helical springs attached to the periphery by pivoted connections operated by twin rollers, secured to the guard plates of the floating rim. By this arrangement any movement of the rim compresses the spring simultaneously and equally transmits the driving force. [Airless Resilient Wheels, Limited, London, England.]

WALTER DERBY HUTCHINSON.

Walter Derby Hutchinson, who died in Paris on the 19th of December last, was born in Middleton, Massachusetts, February 2, 1840. He was the son of Elisha P. Hutchinson. He attended Phillips Academy in his youth and at the age of 16 went to Paris, where, after passing his examination as a civil engineer

WALTER DERBY HUTCHINSON.

at the Ecole Centrale, he entered the rubber works which had been established by his uncle, Hiram Hutchinson, in 1853. It might be stated here that this was the first rubber factory in Europe to manufacture under the Goodyear patents. Mr. Hutchinson finally became general manager of this company and remained with it until he retired from active business, in 1900. After his retirement he still continued to reside in Paris.

ANDREW J. BATES.

Andrew J. Bates, well known to the rubber trade because of his prominence in the shoe manufacturing industry and in the distribution of leather and rubber footwear, died at his home in Webster, Massachusetts, on February 13, at the age of 76. He is survived, besides his wife and three daughters, by a son, Edgar Bates, who is president of A. J. Bates & Co., wholesale distributors of footwear, of New York.

A "MADE IN THE U. S. A." EXPOSITION.

An industrial exposition will be held at the Grand Central Palace, New York, March 6-13, where American-made and American-grown products will be exhibited. This exposition is under the auspices of the National Exposition Committee, composed of more than 100 leading American manufacturers. A national convention will be held at the same time, for the purpose of concentrating work in the interest of the "Made in the U. S. A." movement and to increase efficiency in stimulating American industry and domestic and foreign trade. The offices of the committee are located at 200 Fifth avenue, New York.

The Automobile Club of America has recently opened a fine new four-story garage on Avenue A, between Seventy-first and Seventy-second streets, New York. It has a floor space 125 x 200 feet, with capacity of about 300 cars. The equipment is up to date in every particular, practically every piece of apparatus, with the exception of the heating plant, being automatic, the installation throughout being of appliances made by the Cutler-Hammer Clutch Co., of Milwaukee, Wisconsin.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE general position remains much as it has been for the last four or five months—exceptional activity with regard to military requirements for the British forces and their allies, with a slackness in respect to general mechanical and sporting requisites. As no doubt the arrangements come to with regard to the raising of the embargo on the export of British rubber to America have been closely followed in the United States, any detailed account in these notes would be lacking in news interest by the time of publication, and I shall therefore abstain from more than a word or two. That the general trade of America as well as the rubber trade in particular has suffered by the war is no doubt a fact, but what other country of any importance has not also suffered, and without the compensation of booking large orders for warlike material. The number of American business men taking orders from the different belligerents has been quite a feature of London hotel life. With regard to the special committee of three which has been appointed by the government to deal with all matters concerning the export of rubber to America, viz., Lord Balfour of Burleigh, Mr. Russell Rea, M. P., and Mr. Henry Birchenough, none of them can claim to bring any expert knowledge of rubber to bear upon their duties, though I do not wish to make any reflection upon their general fitness for their task. Lord Balfour—whose eldest son, the Master of Burleigh, has been killed at the front—is a statesman of considerable experience on departmental government committees. Mr. Russell Rea, who is a coal factor of prominence, served as chairman of the departmental committee on the Colliers' Eight Hour Bill, while Br. Birchenough is a lawyer who has made a name for himself. The existence of this committee should do a good deal to reduce the expenditure of time formerly required in applying to the various authorities for permission to get rubber off to America under the new regulation. With regard to the shipment of rubber goods, all of which are conditional contraband, to neutral countries or British dependencies, manufacturers complain a good deal of the vexatious delays which occur in getting the necessary permits, such delays frequently causing steamer sailings to be missed. More especially is the delay resented in the case of small amounts of goods which could be of no possible use for purposes of war.

A record tender for 2,000,000 ground sheets was recently before the already busy British rubber trade. Naturally this was apportioned between a number of works, one of the largest recipients being Charles Macintosh & Co., of Manchester.

CLARK TYRE CO. LIMITED.

As some misunderstanding exists with regard to the position of this company, which has recently fitted up rubber mills at Crayford, in Kent, I may say that a special resolution has been passed for a voluntary winding up, after which the company will be re-formed to carry on business in the manufacture of the pneumatic tire brought out by Mr. Clark when living in Australia. The difficulty that arose in the management was due to the holdings of those of foreign extraction, cases of the sort having been not uncommon since the commencement of European hostilities.

WATERPROOF FOOTWEAR FOR THE TRENCHES.

It will be known to all newspaper readers that the war during the winter has been largely one of entrenchment, though, as our tax papers show, by no means of retrenchment. Discomfort would be a very mild expression for what the soldiers have experienced in standing in water, mud or snow, and it is not surprising that leather footwear has been rapidly ruined and that many cases of frostbite have occurred. For some time nothing was done in the way of supplying rubber boots to the men, though many letters urging this course appeared in the press. More recently, however, two moves have been made. In the first place purchases of rubber boots were made from British makers, and doubtless from American supplies in London, and in the middle of January a large consignment of rubber boots arrived in England from Canada for transshipment to France. In the second place, what is called a wader stocking, to be worn inside leather boots, has been largely contracted for by the War Office. This article is quite a novel one, being the invention of Mr. F. C. Behr, well known in connection with monorail transport. Trenches have been dug near London and the efficacy of the new stocking proved in immersions of 14 to 20 hours duration. What the waterproofing consists of I have no reliable information but have reason to suppose that it is not rubber but wax, on the lines of the new waterproof capes lately brought out. With regard to the suitability of rubber boots for continuous wear there is a good deal of doubt in England, and in the army they have only been used by officers for early morning "stables," etc. Those, however, who can testify to their regular use by lumbermen and others in Canada combat the idea of unhealthiness, especially if the boots have a fibrous lining and are not too tight a fit. With regard to the shipment from Canada mentioned above, it is no doubt a safe surmise that much of it was made in the United States, seeing that the United States Rubber Co. has such a large interest in an important Canadian rubber shoe works.

SOLVENT NAPHTHA.

Despite the large demand from spreaders, it is only quite recently that there has been any appreciable rise in price and in all probability this will not be permanent. The general situation with regard to tar distillation products is now largely controlled by the War Office Committee on the Supply of High Explosives, with which Lord Moulton, the scientific judge of the Appeal Court, is prominently identified. Not only naphtha distillation works but also collieries recovering tar and bonzole from coking plants have come under his close attention, and no product containing toluol can be sold generally without a special permit. Toluol of course is required for the manufacture of dinitro and trinitro toluol, so largely used nowadays in high explosives. Solvent naphtha consists mainly, and at the present time no doubt entirely, of the higher boiling hydrocarbon xylol, and as this must be produced in the distillation process and as it is not required for explosives, there is no reason to apprehead any shortage.

FORTHCOMING MANCHESTER MOTOR SHOW.

Although there is a pretty general consensus of feeling amongst engineers as to the undesirability of holding shows at the present time, it is announced that the North of England Motor Shows, Limited, are promoting an exhibition to be held in Manchester in April, to include motor cars, light cars, motorcycles, commercial vehicles, tires and accessories. It should be said that this show has nothing to do with the Society of Motor Manufacturers and Trades, who have abandoned their customary shows in London and Manchester. In connection with this matter the "Engineer," of London, remarks that the show can hardly expect to be representative of the motor industry of today as the trade is in no mood for this method of publicity. There are few new models to be introduced by leading British makers, while

the French and Belgian works are almost quiescent except for war vehicles. Perhaps, the "Engineer" suggests, America will furnish the bulk of the exhibits, which may be the reason for holding the show at such a time.

A NEW RUBBER COMPANY.

From the metaphorical ashes of the Lancashire Rubber Works, Limited, in Pollard street, Manchester, a new company, called the Pollard Rubber Co., has risen. Reference was recently made to the piece-meal sale by auction of the first-named company, which was in financial difficulties. The rather curious result of this sale was the total amount realized proved to be one-third more than the sum at which the plant and stock were offered by the auctioneer in one lot.

CONTINENTAL TYRE CO. (GREAT BRITAIN), LIMITED.

I referred in my January notes to the judgment given in the High Court in favor of this company as regards collection of debts in England during the war. This judgment was appealed and was considered by a special Court of Appeal presided over by the Lord Chief Justice, with the result that the judgment of the court below was upheld. This means that an alien company registered in England can maintain an action even though all of its shares are held by enemies. Germany cannot complain of any bias in our courts, though in England the judgment is by no means popular generally.

CRUDE RUBBER SHIPMENTS.

Henceforward it will be possible to state definitely the imports into and exports from the United Kingdom of waste and reclaimed rubber as from January 1 this year the British Board of Trade commenced giving the figures separately in their monthly returns. In January England imported 18,700 pounds and exported 383,900 pounds of waste and reclaimed rubber. Exports of raw rubber were less than one-half the quantity shipped during January, 1914. Here are the figures:

To—	1914.	1915.
Russia ..... *pounds*	1,591,500	737,200
Germany	1,850,300	.....
Belgium	660,500	.....
France	1,323,900	687,900
United States	3,556,400	766,600
Other countries	839,200	2,041,700
Total	9,821,800	4,233,400

Compared with the December figures there is, nevertheless, an increase of about 750,000 pounds in our total exports of rubber, all the importing countries having taken more with the exception of Russia.

ASBESTOS.

Asbestos slates, which are now largely manufactured in England, have recently found a new application, as they have been bought by the Admiralty to cover the decks of men-of-war to minimize the danger of fires when in action. It might be thought that there was not much to take fire on deck but this is evidently not the opinion of those in authority.

RUBBER HEELS IN ENGLAND.

The American consuls stationed at Huddersfield and Sheffield, England, under dates of January 5 and 8, reported on the rubber heel situation in their respective districts. From these reports it appears that the rubber heel is increasing somewhat in favor in England, as in the United States, and that prices range from 12 to 36 cents per pair at retail, the wholesale price being 12 to 25 per cent. below this figure. The charge for fitting is extra. They are supplied chiefly by domestic manufacturers, and while distributed to a certain extent through the jobbing houses, are more frequently introduced through the shoe manufacturing concerns, when special concessions in prices and terms must be made. Rubber heels are not advertised in these districts to any extent.

TRADE NOTES.

The employes of the India Rubber, Gutta Percha & Telegraph Works Co., Limited, of Silvertown, London, had subscribed, up to the first of February, £537, 13*s*. 3*d*. (about $2,600) to National, Red Cross and Belgian relief funds, and it is their hope to continue as long as may be necessary to donate £100 monthly, to be distributed between these three funds.

W. T. Henley's Telegraph Works Co., Limited, whose London office—which has a floor area of about 6,000 square feet—is at 18 Union street, Moorfields, E. C., has by various additions recently doubled the size of its plant at Gravesend, and now has under way still further additions and improvements. This company is receiving large orders, particularly for solid tires.

The Wood-Milne Co. is another of the British concerns that have lately increased their productive capacities, having a new factory building under course of erection. The present capacity of the plant is said to be about 1,000 solid tires per week. The company also proposes to acquire extra land at Leyland on which to build further factory additions.

The firm of E. Parser & Co. has been organized to carry on in London the business of importing and dealing in crude rubber. Mr. E. Parser, the head of the new company, was for many years engaged in similar business at Antwerp, but owing to conditions arising from the war he has removed to London, opening offices at 9-10 King street, Cheapside, E. C.

E. E. Hodgson, for many years resident in the United States and for some time past interested in the Empire Rubber Co., scrap rubber and metal merchants, Leeds, Yorkshire, England, having joined the British army, his partnership with H. Waterhouse ("Rubber Billy") has been dissolved. The latter is now sole proprietor of the Empire Rubber Co., also of the Rubber Ring Manufacturing Co., of Leeds.

RUBBER MANUFACTURERS AND MOTOR SHOWS.

The New Motor & General Rubber Co., Limited, of London, has instituted legal proceedings against the Society of Motor Manufacturers & Traders, Limited, organizers of the International motor exhibitions at Olympia, claiming the right as members of the society to ballot for space at the exhibitions and asking an injunction to restrain the society from excluding them from such ballot, also damages for breach of agreement and for being denied the right to exhibit at the 1913 show. The defendant society makes a general denial of these claims. The plaintiff company joined the society in 1906. In 1907 the society's charter was changed, the new rules providing that only manufacturers or sole concessionaires of manufacturers of motor cars should thereafter be entitled to ordinary membership—no firm enjoying membership prior to the close of 1906 being included in this rule—all others to be associate members. The formation by the plaintiff company, in 1910, of Almagam, Limited, is held by the defendants to have terminated membership in the society, the clause relating to old members not applying.

Mr. Thomas Warwick, managing director of the New Motor company, is the inventor of "Almagam" and "Rubmetal," for tire repairing, both of which are manufactured by the Associated Rubber Manufacturers, Limited.

The Shipping, Engineering and Machinery Exhibition, which was to have been held in London during the fall of 1914, has been postponed, and is now scheduled to take place during the fall of the present year, at Olympia, London.

In the French armored cars, where the machine gun is mounted in a rotating turret with a flange resting on the edge of the circular aperture in the roof, a rubber ring is fitted under the flange to prevent movement of the turret during firing.

THE GERMAN RUBBER SITUATION AS GERMANS SEE IT.

[*The following paragraphs are taken from a review of rubber conditions in Germany during the year* 1914, *which appeared in a recent issue of the "Gummi-Zeitung":*]

THE year 1914 opened unfavorably for the German rubber industry, which, like other industries in Germany, was still suffering from the after-effects of the recent Balkan disturbances. But the German rubber industry was gradually righting itself, and adapting itself to the new conditions, and the outlook was much brighter when, suddenly, the great war broke out, paralyzing all industries, including the rubber trade.

The extraordinary decrease in prices of raw rubber, due to the flooding of the European market by unsold plantation rubber, had enabled German manufacturers to meet the general depression and even increase their output. The decrease in the value of manufactured goods produced by Germany was due to the decreased cost of raw materials. Business in surgical rubber articles was saved from a deplorable situation by the outbreak of war, which put it on its feet again. The unhealthy condition of this branch of the rubber industry was chiefly due to the laws prohibiting the sale of certain articles, and especially to the harsh interpretation of these laws by various courts, which included under the prohibition many articles having no connection with those aimed at by the laws. The surgical rubber business was also menaced by the tendency among consumers to trade direct with the manufacturers, and even to manufacture, themselves, for their own individual purposes. Then, doctors often purchased direct from the producers. To protect their interests, manufacturers and dealers in surgical rubber goods attempted to form a syndicate, but so far it has not been effective.

The electric cable industry, so closely allied to rubber, although it had made serious efforts to put its production on a profitable basis, was still suffering cruelly from English competition, and even being assailed from the ranks of the domestic rubber industry.

Another tendency the rubber industry had to contend with was the growing policy among consumers of purchasing for their immediate needs only. Orders were especially small from the building and furniture manufacturing lines. Even the electrical branch, which is usually prosperous, felt the general depression severely. The slight rainfall affected the business of rubber clothing and rubber shoe manufacturers. The German tire industry, which has suffered severely by the practice of allowing too generous guarantees, as well as from French and British competition, showed no tendency toward improvement. Then at the very commencement of the year labor organizations and socialists started a movement (which was partially successful) in favor of increased wages. On top of all this, extra burdens were placed on the shoulders of the German rubber industry by the "Clerks' Insurance Law."

The German rubber industry took an active part in four international expositions, and thus did its share in maintaining the reputation of German industry on foreign markets. Generally speaking the situation of the German rubber industry, though not bright, was improving and its members could look to the future with confidence, when the terrible war broke out, affecting all industry, including rubber. The general effect of the war was, naturally, to make conditions even worse than they were before. Those firms having government contracts to fill had all the work they could do, but this is not sufficient compensation for what they are losing through the war. The shutting off of nearly all means of communication, the closing of sea traffic, held back enormous quantities of goods ready for shipment, and caused great quantities of merchandise en route to be seized and confiscated. The exigencies of war created a shortage in skilled labor, which further curtailed production when it did not paralyze it altogether.

Large concerns had a considerable supply of raw rubber on hand and, thanks to the embargo on rubber exports, an immediate rubber famine was not to be feared, but benzine, benzol and other solvents were not to be had in sufficient quantities. Manufacturers and dealers in toys and sporting goods, manufacturers devoting their efforts exclusively to foreign markets, were among those most severely affected by the war. Export trade was dead.

The rubber goods trade has been in a very bad condition since the war broke out. Most dealers had quantities of merchandise in stock which, under present conditions, are no longer in demand. Few, if any, had any stock of articles which were in real demand. Many dealers were willing to pay increased prices to get deliveries and satisfy their customers, but quick deliveries were impossible. The outbreak of war was so sudden that no one foresaw it and no one had on hand the proper goods to meet the new demands. Of late matters have returned to a somewhat normal state. The government has recognized its mistake in taking too many hands away from industry.

As long as the war lasts it will be quite impossible to make any predictions, but it is already clear that the greatest loss to the German rubber industry is directly due to its total dependency upon foreign countries for its supplies in raw materials.

RUBBER FAMINE IN GERMANY.

The following statistics of rubber imports into Germany from England during the months between August and December, 1913, are of interest in forming an opinion of the rubber famine which is now affecting Germany. These months correspond, in 1913, with the first four months of the war.

GERMAN CRUDE RUBBER IMPORTS FROM ENGLAND IN 1913.

August	*tons*	714
September		628
October		723
November		575
December		771
Total		3,411

German exports of rubber goods during the first seven months of 1914 (before the war began) were considerably larger than for same period in 1913.

RUBBER SUBSTITUTES IN GERMANY.

A German dealer in rubber goods writes to the "Gummi-Zeitung" concerning the development of the manufacture of articles from rubber substitutes, rendered necessary by war conditions in Germany. In his opinion the German nation, as well as German rubber manufacturers, should be most thankful to the inventors of rubber substitutes and to those who have been willing to devote their intelligence, energy and capital to the development of this new field.

It is owing solely to rubber substitutes, he states, that certain branches of the German rubber industry are able to satisfy their customers. Many technical articles, which formerly were only made of real rubber, are now manufactured from rubber substitutes. Quite a number of articles which, for one reason or another, cannot be made of rubber substitutes, are no longer to be obtained on the German market, there being no raw rubber available for their manufacture. This dealer advises customers not to be too particular about the appearance of substitute articles, which often do not look so well as real rubber. Manufacturers are doing their best. They will no doubt be able to improve upon their substitute articles, but they must be given time as this line is absolutely new for many of them. The great point to keep in mind is that men have been able to create practical substitutes and use them in manufacturing necessities.

He believes that rubber substitutes have come to stay, that they will continue to be sold after the war is over, and that

people should make up their minds to get accustomed to "war rubber" as they have to "war bread." Necessity forced "war bread" upon the population of Germany and it is very likely that it will be the same for "war rubber." People will get used to both and will continue to use both after the war is over.

GERMAN CABLE MANUFACTURERS FORM POOL.

German manufacturers of electric cables have formed an important syndicate combining all the large concerns engaged in this line of manufacture. The important firm of Brown, Boven and Co., which last year took over the J. Walken plant, at Cologne, and turned it into a cable factory, has joined the pool.

A RECENT EDITORIAL FROM A GERMAN TRADE JOURNAL.

An editorial paragraph from a recent issue of a German paper devoted to the bicycle and motor car trade runs as follows:

"Naturally, the war has paralyzed the activity of our industries and of our trade, but we should not paint the future too black. Quite aside from the purely humane point of view, which makes us wish for the end of all this suffering, our sincere wish for our commerce and our industries is that the present year may bring the end of the war and a happy and enduring peace. Of course, the future peace will not heal all wounds immediately, especially in the case of concerns engaged in export, but we confidently hope that, when the war ends, we will be able to find plenty of profitable work supplying the demands of the home market, replacing what has been destroyed by the war. In time the industries of the world will bloom again, and we hope that German industry and German export trade will get the share which heretofore they have obtained through their skill and energy. Our industries have been holding out through all these difficulties and they will hold out until the victorious end for which the armies and navies of Germany and Austria-Hungary, like ourselves, are fighting."

RUBBER CONDITIONS IN AUSTRIA.

A somewhat difficult situation has been brought about in the German rubber export trade to Austria. The war office has stopped the export of certain rubber goods from Germany to Austria, and Austrian manufacturers have therefore been thrown back on their own resources. Rubber bags and cushions and articles of this description are now manufactured in larger quantities, but a general shortage in rubber manufactured goods is expected very soon, as the Austrian government demands large supplies of tires from the manufacturers and compels them to give up any other manufacture but that of tires. The German rubber manufacturers, who have large stocks of all surgical rubber goods, are trying now to induce the German war office to lift the embargo on such goods as far as Austria is concerned.

GERMANY COULD HAVE USED "TROLIUS" CARGO.

In a recent newspaper article on the rubber trade and the war, Mr. John McEwan, chairman of the Rubber Growers' Association, commented on the sinking of the "Trolius," with her cargo, which included 1,300 tons of crude rubber, by the German cruiser "Emden." He pointed out what a help this quantity of rubber would have been in relieving the present German rubber famine if, instead of sinking it, the "Emden" had been able to seize it and get it to some port in Germany.

RUBBER PLANTATIONS IN GERMAN EAST AFRICA.

The rubber plantations in German East Africa, which were planted in 1913, are progressing satisfactorily although some of the older trees have been damaged by the winds and some destroyed by cryptogamous insects.

THE DUTCH EAST INDIES.

RUBBER STATISTICS PREPARED BY THE MEDAN CHAMBER OF COMMERCE.

ON July 1, 1914, the rubber plantations on the east coast of Sumatra covered 244,203 acres, of which 40,000 acres were producing. There were 3,305 planted acres in 1905; 73,826 in 1910, and 239,650 in 1913. In the Cap Tamiang district rubber cultivation was first undertaken in 1909, when 2,250 acres were planted. In 1913, 14,240 acres were under cultivation.

In 1913, 7,543,142 pounds of plantation rubber and 30,153 pounds of wild rubber were exported from the east coast. During the first six months of 1914 the exports from this coast amounted to 5,073,950 pounds. The greatest part of this rubber was shipped to London. Other ports to which shipments were made were Amsterdam, New York, Antwerp, Hamburg, Rotterdam, Havre and Bremen.

In 1913, the rubber plantations of the Malay Peninsula covered 708,545 acres and produced 61,971,800 pounds of rubber.

Dutch capital invested in rubber undertakings in the Dutch East Indies amounted in 1913 to $26,753,301, while foreign capital similarly invested aggregated $85,316,419, of which $69,055,198 was issued.

Imports of plantation rubber into Holland increased from 10,560 pounds in 1907 to 218,020 pounds in 1910, to 1,866,700 pounds in 1912 and to 3,919,900 pounds in 1913. Meanwhile, imports of wild rubber showed only a slight increase, from 2,077,000 pounds in 1907 to 2,917,200 pounds in 1913. In the last 12 years imports of raw rubber into Holland have increased 100 per cent.

Increased quantities of rubber were exported from the Dutch East Indies to Japan in 1914, and were sold at fair prices compared with those obtained in that country for Para sheet; Para sheet bringing 1.20 yen [about 60 cents], and Borneo sheet 1.15 yen [about 57 cents].

DUTCH INDIES A FIELD FOR AMERICAN AUTOMOBILE TIRES.

Imports of automobiles and accessories by the Dutch East Indies show this market to be well worth the attention of the American manufacturers. Statistics for 1913 give the number of automobiles imported during that year at 1260, valued at $1,638,000, of which 490 came from the Netherlands, American cars, of which 250 valued at $250,000 were imported, coming second on the list. When it comes to tires, the American makes were very inadequately represented, only $8,000 of the total tire imports of $590,000 coming from the United States. At the close of the year, six different tires were represented in Java, of which but one was from the United States. The value of the American tires imported is thus entirely disproportionate to that of the cars from this country, and as the people of the Dutch East Indies are evidently quite deeply interested in the motor car, the market is one that it should pay American manufacturers to cultivate.

Mr. E. de Kruyff, representative of the Netherlands East India Government at the Panama-Pacific International Exposition, is interested in opening up direct trade relations between Netherlands East India and manufacturers in the United States. If addressed, in care of the Exposition, San Francisco, he will be glad to furnish manufacturers commercial information concerning the country he represents.

Tandjong Rubber Co., Limited, at the seventh annual general meeting reported 545,267 pounds of rubber harvested at an all-in cost of 1s. 4.42d. The gross selling price was 2s. 2.73d. The year's net profit was £24,176, 0s. 7d., making with £5,401, 12s. 7d. carried forward £29,577, 13s. 2d. available for distribution. It was proposed to pay a dividend of 8 per cent., place £10,000 to reserve and carry £7,577 13s. 2d. to next accounting. A crop of 780,000 pounds is the estimate for next year.

Some Rubber Planting Notes.

WHEN war broke out, followed by something like a panic in financial circles, the plantation industry of the Orient appeared to be in a very bad way. All communication between this country and the estates was, for the time being, suspended, and it was impossible to transmit funds. A little later, when cable intercourse was resumed, instructions were given to estate managers to cut down expenditures to a minimum, to take on no additional coolies and to discharge any who were not absolutely indispensable. In Malaya, particularly, the net result after six months of war has been greatly to modify the labor situation. Not only have the plantations reduced their forces but the tin mines as well, while the government has temporarily suspended a number of public works. Many coolies have been expatriated and immigration has been stopped, ostensibly because of the existence of smallpox at Negapatain. As a result, British Malaya now finds itself with about 40,000 less coolies than at the time of the outbreak of war.

Contrary to expectations, however, the rubber producing industry has suffered least of any through the European conflict. The commodity has continued in good demand and prices have been well maintained, even showing a tendency to advance. In the circumstances, the plantation companies are beginning to regret their hasty action with regard to labor and are already clamoring for the resumption of immigration. But it does not appear likely that the situation will be very quickly mended. So many European assistants on rubber estates have volunteered for the war that it is a question whether plantation staffs are at present in a position adequately to control and supervise large new groups of coolies.

The subject is of special importance because of its possible bearing upon the supply of plantation rubber. Under normal conditions about 20,000 tons additional might be expected from the Middle East this year; but if, through shortage of labor, it should be necessary to restrict tapping operations, estimates for 1915 may have to be considerably modified.

CAPITALIZATION OF RUBBER ESTATES.

One of the largest and best known producing companies, Linggi Plantations, after having paid more than 900 per cent. in dividends within 9 years, now finds it necessary to raise further capital. The sum required is £50,000, which it is proposed to raise by the issue of 100,000 shares of 2s each at the price of 10s. The market price of the existing shares is about 14s. In this way the capital account will only be increased by £10,000. Linggi Plantations has about 7,500 acres under rubber, of which some 3,000 acres are not yet in bearing. Last year the crop of rubber was 1,370,500 pounds, which compares with 1,132,500 pounds by the Highlands and Lowlands Co. It may interest our readers to know that the capitalization of the planted area of the Linggi property is £15 per acre. This means that if the average production all over were 400 pounds per acre and sold at a profit of only one penny per pound the company could still pay its shareholders 10 per cent. It may be added, however, that inasmuch as the company's 2*s.* shares are priced at over 14*s.*, the share market capitalization is at the rate of nearly £110 per acre.

HEVEA IN COCHIN CHINA.

In Cochin-China there are about four million *Hevea Brasiliensis* trees planted on an area of about 32,500 acres. In 1913 Cochin-China exported 660,000 pounds of raw rubber as compared with 385,000 pounds exported in 1910. Practically all these exports go to France, principally to the ports of Havre and Bordeaux.

Statistics of exports from French Indo-China for 1913 show caoutchouc to the value of $128,700 shipped through the port of Saigon and $1,673 from Cambodia.

THE PLANTING OF MANIHOT GLAZIOVII ON THE MAYUMBA.

THE climatic and atmospheric conditions at Mayumba, in the French Congo, are particularly favorable to the planting of the *Manihot,* as the tree requires but little rain. The soil at Mayumba is composed of several different strata, which, notwithstanding that they are found over practically the whole district, are, however, of varying degrees of thickness, according to the structure of the ground. Underneath the top stratum a layer of flint is found, which is followed by a layer of rolling slate, sometimes thick enough to prevent the percolation of water. In some places the top stratum is so thin that the flint comes up to the surface. The region around Mayumba is for this

OLD TAPPING ON MANIHOT HALF-HERRINGBONE SYSTEM, LOWER CONGO.

reason suitable for the planting and growing of *Manihot,* but experience seems to have shown that the lower parts of the district should be avoided, as the great humidity of the ground is dangerous to the roots of the younger plants.

The planting of *Manihot* in this region dates back only about ten years. Owing to its rapid growth and its small needs, the tree formerly found much favor. Later, however, it lost caste. The planters heard of the unsuccessful experiments in some parts of the Congo State—where the conditions were not favorable to the tree—and further grew discouraged because of injudicious and therefore ill requited attempts at tapping. In consequence of this, many advised against the planting of *Manihot,* and in one case a large number of trees were cut down without the least attempt to save the rubber; and this at a time when rubber was selling at something like $3 per kilogram—or nearly $1.40 per pound.

After a period of neglect, *Manihot* found a champion in Mr. Jacquer, who made extensive experiments and secured a new and practical knife for tapping. He used the herringbone incision. Experience has shown that this is not the method best adapted for the tree, nevertheless, the results were so encouraging that he planted about 3,000,000 *Manihot* trees.

Notwithstanding its poor results, the fishbone method of tapping is still almost everywhere in use in this district. The preparation of the trees necessary for this method is not always

without danger to the tree, and it requires more ability and judgment than are usually found among the negro workmen. The result of this is that the trees are frequently ill treated, so that the incisions heal badly and the tissue of the bark suffers.

Other methods have been recommended in consequence, and the tapping procedure employed on the German plantation in Lewa is finding favor with planters. The results obtained by the Lewa method have been very promising, experience showing that the tree recovers quickly and that a second tapping gives still better results than the first.

Some plantations are growing *Manihot* directly from seed, planting the seeds directly in the future soil of the tree. This method, as a rule, produces very strong trees, though it is not always entirely successful. The larger plantations, however, are following the nursery system, later transplanting the stumps to their proper places. The trees are planted from 12 to 15 feet apart, which gives enough space for the branches. As a rule, the tops of the trees will touch in about four years. The trunks are then protected against the sun—which is very important—and the gatherers can work during the whole day.

The plant *Cissus adenocaulis*, locally called at Mayumba "Lembugi," serves as an excellent medium for coagulation.

RUBBER EXPORTS FROM STRAITS SETTLEMENTS.

A cablegram from the Colonial Secretary to the Malay States Information Agency announces that the exports of rubber from the ports of the Straits Settlements for the month of December amounted to 2,334 tons, as compared with 2,370 tons in the preceding month and 1,217 tons in the corresponding month of 1913. The total exports for the year amounted to 19,727 tons, as compared with 11,889 tons in 1913 and 5,799 tons in 1912. The following are the comparative statistics for three years:

	1912.	1913.	1914.
January .....*tons*	253	784	1,181
February	274	743	1,703
March	427	898	1,285
April	387	762	1,548
May	431	814	1,309
June	398	812	1,480
July	380	1,120	1,584
August	729	1,315	1,325
September	597	1,057	1,602
October	550	1,144	2,006
November	816	1,223	2,370
December	557	1,217	2,334
Total	5,799	11,889	19,727

These figures include transshipments of rubber from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the non-Federated Malay States, as well as rubber actually exported from the Colony, but do not include rubber exports from the Federated Malay States.

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram to the Malay States Information Agency announces that the exports of rubber from the Federated Malay States for the month of January amounted to 3,473 tons, as compared with 2,542 tons for the corresponding month last year and 3,361 tons in December last.

The January export is the largest amount of plantation rubber yet recorded for one month by the Malay States.

Brooklands & Selangor Rubber Co., Limited, at its fourth annual meeting, received a report announcing profits for the period covered of nearly £5,000. The loss of a consignment of 3,000 pounds of rubber in the "Trolius," which was sunk by the "Emden," was reported. The estate was reported in good condition, coolies all paid to date and production of rubber in progress.

Sengat Rubber Estate, Limited, reports a crop of 281,668 pounds of rubber, the original estimate having been 247,000 pounds. The cost f. o. b. was 9.63*d*. It was decided to pay a dividend of 1*d*. per share.

BALATA MONOPOLY IN DUTCH GUIANA.

By Our Regular Correspondent.

WITH few exceptions the inhabitants of Dutch Guiana, and more especially those engaged in the balata industry, are all up in arms against the ordinance just created by the government, which they claim favors the companies "Suriname" and "Guyana." These concerns have been amalgamated and hold most of the available large producing balata tracts.

A cablegram signed by leading men has been forwarded to the Minister of Colonies at the Hague which reads as follows:

"Balata industrials and others interested implore disapproval new balata ordinance. This ordinance will result only in interest of united companies 'Suriname' and 'Guyana' which will have exclusive right, obtaining best balata lands in very extensive area, creating monopoly, excluding other exploiters, to detriment colony and population. Petition follows."

A petition largely signed by influential members of the community followed the cable; but two days after the despatch to the Minister, the Governor received a wire from this high official to the effect that the new ordinance was accepted by the House and had passed its final reading.

The people, therefore, are indignant. The press, with only one exception, has taken the matter up and openly condemns the policy of the authorities. The attitude of the papers is most threatening, and it is openly asserted that trouble will soon follow this incident.

It is, however, quite clear that the amalgamated concerns have the best of the deal, and it is stated that they are negotiating a loan in the United States to operate the lands which they now hold, covering all the available balata forests in the colony.

There is no getting away from the fact that as far as the balata industry is concerned the only people in the colony to derive any benefits from the exploitation of this enterprise are those who are directly associated with the companies in question.

RUBBER EXPORTS FROM TRINIDAD.

The following table shows the shipments of rubber from Trinidad for the year just past, as contained in the "Proceedings of the Agricultural Society of Trinidad and Tobago":

January to November, inclusive.....*pounds*	3,845
December	797
Total shipments in 1914.....	4,642
Total shipments in 1913.....	6,454
Total shipments in 1912.....	6,736

A NEW STEAMSHIP LINE TO SOUTH AMERICA.

Steamship service is soon to be established between New York and the east coast of South America, Norton, Lilly & Co., Produce Exchange, New York, having secured the steamer "Crofton Hall" for operation between New York, Montevideo and Buenos Aires, carrying freight and passengers. The "Crofton Hall," whose initial trip in this service will be made March 1, was built in 1913, with all modern passenger conveniences, and is the only American passenger steamer going direct to the east coast of South America.

The Department of State of the Republic of Cuba requests catalogs and samples of articles of rubber, gutta percha, etc., together with cable address of the manufacturer, trademarks and other information for exhibition in a "commercial museum" attached to its Bureau of Information. These may be sent direct, addressed to Sr. Secretario de Estado, Habana, Cuba, or to the Cuban consulate general, 82 Beaver street, New York.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

AMAZON TRADE CONDITIONS.

By Miguel P. Shelley, of Para.

ACCORDING to the latest statistics, Brazil during the fiscal year 1914 imported goods to the value of $308,409,000. Of this amount, imports from the United States only amounted to $29,963,914; while, on the other hand, the United States imported from Brazil merchandise—chiefly crude rubber and coffee—to the value of $101,329,073.

Referring to the Amazon country alone, the exports of rubber and caucho from that district for the year 1913 were as follows:

To—	United States.	England.	France.	Other Countries.	Total.
From Para	$8,962,195	$8,778,145	$1,838,451	$519,000	$20,097,791
From Manaos	7,329,500	6,946,689	1,873,001	466,616	16,615,806
Total	$16,391,695	$15,724,834	$3,711,452	$985,616	$36,713,597

With regard to the imports into the Amazon district, separate reliable figures do not exist, but they import only those things from the United States that are absolutely necessary, such as kerosene oil, flour, lard and a little machinery, or other articles which they cannot obtain from England, Germany or France, notwithstanding the fact that America is nearer to the Amazon than any of those countries.

Why does American trade with Brazil lag so far behind? The table of Amazonian exports indicates that the United States is importing about 40 per cent. of the total—mainly crude rubber. But in reality it is using 60 per cent. of this crude rubber. The additional 20 per cent. is reimported from England after England has imported it from the Amazon. The main reason for this paradox is the use of letters of credit issued by English banks in financing the operations of American importers. An additional factor is the ready shipping facilities that the English merchants have.

The freightage from Brazil through England to the United States is often less than to the United States direct. This is rendered possible by the deplorable lack of an American merchant marine.

BANKING PROCEDURE IN BRAZIL.

Let us now enter upon a more explicit understanding of the situation. Let me explain in detail the real system by which exportation and importation are carried on, and thereby disclose the real cause for the failure of the United States to participate properly in the Brazilian trade.

Rubber, cocoa and Brazil nuts, the principal products exported, are sent from the interior to the two central markets and shipping ports—Para and Manaos. There they are bought by a few houses, namely, Zarges, Berringer & Co. (German and English), De Lagotellerie & Cie (French), Adelbert H. Alden and the General Rubber Co. (American), Suarez Hermanos (English), and J. Marques, Pires Teixeira & Co. and Pralow & Co. (local). These firms ship the rubber to its destination, drawing against the shipments. This draft is made out in pounds sterling. Even American dealers have to accept the drafts in pounds, although they are buying them in dollars. This is the whole drawback in the situation. Since there is no American bank in the Amazon country, but only English, namely, London & River Plate Bank, Limited, London & Brazilian Bank, Limited, and the British Bank of South America, the Amazonian dealer has no other choice in selling his drafts. This triple exchange from Brazilian currency to pounds sterling and from this to dollars, and the consequent banker's commissions, of course render the merchandise dearer for the American than for the English. The financing of imports is similarly affected. Add to this the fact that the importer is less versed in business methods than the exporter, one can readily see that the six exchanges in his drafts weary and trouble him so that he is glad to have nothing to do with American imports.

The English banks operating in Brazil, according to the statistics of 1906, cleared profits aggregating the not inconsiderable sum of £1,271,611, or about $6,180,023 in American gold.

The manufacturer, instead of being directly in contact with the producer, buys his rubber from the dealer, who, taking advantage of the situation, speculates with this rubber. The dealer buys it in advance very cheaply, to sell at a high price when the manufacturer needs it.

An American bank would make it possible for rubber transactions to take place directly between the producer and the consumer. Besides relieving the export articles of their great burden, the middlemen's profits—which are not less than 8 per cent.—and American financing would bring the whole rubber trade to the United States. It would also do away with the speculation existing now in the rubber trade, which is so harmful to the manufacturer as well as to the producer. The organized co-operation of the manufacturers on one side and the producers on the other, would consolidate the rubber business. But it must have the American bank's financing first.

The importation of goods to the Amazon from England and Germany is due chiefly to the existence of British banks, there for the English trade, and to German special agencies for the German trade. The collection of bills for merchandise bought from all nations of the world, including the United States, is carried on by the English banks in pounds sterling. Consequently, besides the profits from exchange, England dominates the Brazilian market. The English banks keep a good record of all the business transactions made with Brazil so that they may be able to advise all who are employing their capital there and who wish to do so.

THE NEED OF EFFECTIVE ADVERTISING PROPAGANDA.

Besides the lack of banking and shipping facilities and the confusion of the credit system, there is still another cause for the failure of American trade in Brazil. This is the ineffectual propaganda. The greatest portion of the advertising matter sent to Brazil is in the Spanish language, and it is sent to some of the dealers in the big cities. In the first place, Portuguese, not Spanish, is used in Brazil, and the two languages have about as much relationship as Dutch and German. Secondly, it is not the dealers that need the propaganda. They require a demand for the goods they handle. This demand you must create among the consumers. For this reason the Germans are far ahead even of the English, who dominate in the main through their banks. Every commercial center has a German agency which is capable of giving full information to consumer, dealer and manufacturer. These distribute pamphlets, circulars and general literature of German goods in exactly those quarters where it is needed. They advertise the goods in the local papers. They also have a very clear knowledge of the credit system and can furnish full information in this connection to any German merchant who requires it. This applies to all South American countries.

As an effective means of promoting United States trade in Brazil, and especially on the Amazon, I would suggest to the American Manufacturers' Export Association that they create a department—or a separate corporation—which should come in contact directly with the rubber producer. The same association could promote the establishment of an American bank, which should take charge of the collections for the goods sold and buy the drafts of the goods bought.

In order to have all the information required by the producer and the consumer, I would suggest the co-operation of the United States government, which is showing great interest now in foreign trade by sending out agents and issuing a daily commercial bulletin. The American consuls are furnishing reports, but they are quite inadequate, since the consuls have no time to do this work; and besides, it requires a local man who is acquainted with local conditions. My idea is that every consulate should have a commercial department, managed by a local business expert, on a salary or commission basis.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JANUARY 5, 1915.

NO. 1,123,361. Fountain syringe. L. E. Pease, Tufts College, Mass.
1,123,375. Tire fabric. H. K. Raymond, Akron, Ohio, assignor to The B. F. Goodrich Co., New York.
1,123,503. Leather sole with rubber plugs. A. F. Durgin, Haverhill, Mass.
1,123,570. Combined toy and physical culture apparatus, containing elastic cord. E. Sandow, London, England.
1,123,698. Composite outer sole. H. F. Crawford, assignor to C. & S. Rubber Sole Co.—both of Brockton, Mass.
1,123,875. Spring wheel comprising an outer elastic tread. J. L. Heymann, Fayetteville, Tenn.
1,123,912. Life saving suit. F. A. Moffitt, Chicago, Ill.
1,123,941. Detachable rubber heel. S. L. Sneierson, assignor to Independent Button Fastener Machine Co.—both of Boston, Mass.
1,124,062. Heel plate comprising a strip of soft rubber. H. G. Robinson, Oakland, Cal.
1,124,190. Rubber sole rolling machine. E. E. Winkley, Lynn, Mass.

Trade Marks.

77,297. J. Wallace, New York. The word *Inkograph*. For fountain pens.
80,455. Brooklyn Shield & Rubber Co., New York. The words *Le Roy*. For dress shields.
82,561. The Icy Hot Water Bottle Co., Cincinnati, Ohio. The word *Comfy*. For hot water bottles of metal and other materials.

ISSUED JANUARY 12, 1915.

1,124,302. Rubber covered metal article and method of making the same. L. Draft, Rutherford, N. J., assignor to Electro-Chemical Rubber & Manufacturing Co., a corporation of New Jersey.
1,124,381. Collapsible core. A. Adamson, Akron, Ohio.
1,124,412. Fabric tension governor for tire making machines. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York.
1,124,439. Resilient vehicle tire. C. E. Hoops, Kansas City, Mo.
1,124,472. Breath guard. R. J. Lemonds, Livingston, Ky.
1,124,480. Carrier for braiding machines. A. Littlefield, assignor to New England Butt Co.—both of Providence, R. I.
1,124,705. Pneumatic tire. J. H. Clune, Springfield, Mass.
1,124,710. Gaiter. J. T. Crowley, assignor to The Beacon Falls Rubber Shoe Co.—both of Beacon Falls, Conn.
1,124,753. Armored pneumatic tire. C. W. Levalley, Milwaukee, Wis.
1,124,884. Steaming device comprising a brush with hose attached. H. Gemignani, Pittsburgh, Pa.
1,124,887. Swimmer's attachment. R. C. Grady, Bath, Me.
1,124,920. Process of reclaiming rubber. H. W. Kugler, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,124,936. Smoking pipe tester comprising a rubber bulb. M. May, New York, N. Y.
1,124,988. Rubber heel and sole. O. R. Witter, Swampscott, Mass.
1,125,019. Elastic heel protector. E. Haaf, Donaueschingen, Germany.

Trade Marks.

79,974. Tacony File & Hardware Co., Philadelphia, Pa. Representation of an inverted tack. For rubber files.
81,510. The Philip Carey Manufacturing Co., Lockland, Ohio. The word *Century*. For rubber roofing.
82,183. The National Belting Co., Elyria, Ohio. The words *Bee Dee*. For rubber and fabric beltings.
82,381. The National Tire & Rubber Co., East Palestine, Ohio. The words *National Highway*. For automobile tire casings and tire tubes.
82,779. Clauson Shoe Co., Rutland, Vt. The words *Arch-Rite*. For rubbers, boots, etc.
83,114. A. W. Faber, Stein, near Nuremberg, Germany. The word *Omar*. For rubber pencils, rubber erasers, etc.

ISSUED JANUARY 19, 1915.

1,125,129. Inner tube for automobile tires. G. Kush, New York.
1,125,134. Sponge rubber insole and arch support. J. D. Lee, Cleburne, Tex.
1,125,276. Steam vulcanizer. J. O. Drew, Mason, Mich.
1,125,303. Method of producing beads for tires. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York.
1,125,431. Collapsible core. A. Adamson, Akron, Ohio.
1,125,470. Fountain pen filling device. H. N. Carpenter, Woodford, Vt.
1,125,542. Apparatus for use in administering anesthetics. A. Humphries, Napier, New Zealand.
1,125,556. Cushion horseshoe. W. J. Kent, New York.
1,125,609. Apparatus for treating rubber. L. C. Warner, Naugatuck, assignor to The Beacon Falls Rubber Shoe Co., Beacon Falls —both in Connecticut.
1,125,678. Self inflating tire. J. Fernandez, Houston, Tex.
1,125,767. Resilient wheel. W. Trabue, assignor to Pneumatic Hub-Tire Wheel Co.—both of Louisville, Ky.

Trade Marks.

80,267. L. Eckert, Pittsburgh, Pa. The word *Ciropractor*. For boots and shoes made of rubber.
83,185. W. Perkins, San Francisco, Cal. Representation of a runner with the word *Marathon*. For rubber heels and soles.

ISSUED JANUARY 26, 1915.

1,125,989. Arch support. E. J. Emary, Portsmouth, N. H.
1,125,993. Rubber soled shoe. A. J. B. Faure, Paris, France.
1,126,051. Device for use in playing golf. J. T. McGillicuddy, Worcester, Mass.
1,126,232. Wheel tire. F. D. Lane, assignor to Bisbee Straight Motion Engine Co.—both of Bisbee, Ariz.
1,126,327. Apparatus for treating latex. H. A. Wickham, London, England.
1,126,366. Bust reducer. J. M. Bodensiek, assignor of one-third to G. O. Bodensiek—both of New York, and one-third to F. Broaker, Brooklyn, N. Y.
1,126,367. Hip reducer. J. M. Bodensiek, assignor of one-third to G. O. Bodensiek—both of New York, and one-third to F. Broaker, Brooklyn, N. Y.
1,126,458. Shoe sole. N. H. Hassel, Los Angeles, Cal.
1,126,469. Vulcanization of rubber and production of vulcanized rubber products. F. Hofmann and K. Gottlob, Elberfeld, Germany, assignors to Synthetic Patents Co., Inc., New York.
1,126,601. Water bag. R. B. Whitmarsh, Los Angeles, Cal.
1,126,648. Wear resisting laminated fabric for tires, etc. I. R. Y. Marble, Newport, R. I.

Design.

46,884. Core for vehicle tire. J. A. MacMillan, Dayton, Ohio.

Trade Marks.

79,239. Boonton Rubber Manufacturing Co., Boonton, N. J. The words *Hi Tensit*. For distributer insulators for magnetos for ignition systems.
82,431. The Sterling Gum Co., Inc., New York. The word *Fruito*. For chewing gum.
82,449. J. A. Riggi, Brooklyn, N. Y. The word *Lamichew*. For chewing gum.
83,081. J. Ullrich, New York. Representation of a lady's head on an ink pencil with the words *"American Maid and Vulcan."* For fountain pens and ink pencils.
83,241. Clark Rubber Manufacturing Co., Franklin, Mass. The word *Comporub*. For soles and heels of shoes.
83,407. Continental Rubber Works, Erie, Pa. The word *Vitalic*. For rubber matting, stair treads, hospital sheeting, etc.
83,592. Powell & Campbell, New York. Diamond design with initials *P* and *C*. For boots, shoes and rubbers.
83,636. The B. F. Goodrich Co., New York. The word *Akrite*. For rain coats.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1913.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 6, 1915.]

20,205 (1913). Spring wheel with continuous outer rigid ring and pneumatic cushion. F. F. Ganly, 153, Acomb street, Rusholme, Manchester.
20,242 (1913). Abdominal belt. C. U. F. West, Sydney House, The Beeches, near Slough, Bucks.
*20,350 (1913). Bath with rubber lining. E. A. M. Gallagher, Gouverneur Hospital, New York, U. S. A.
20,448 (1913). Vehicle wind screen with rubber strip. G. E. Whetman, 69, Cavendish Building, Clerkenwell, and A. C. Dulcken, 30, Mincing Lane, E. C.—both in London.
20,461 (1913). Puncture preventing layers of metallic wire gauze and rubber canvas. S. Lyle, 9, Royal Oak Walk, Pitfield street, London.
20,471 (1913). Apparatus for coating fabrics with rubber. W. A. Higham, Turners Hill, Chestnut, Essex, and H. Skelton, 175, Gt. Dover street, Southwark, London.
20,643 (1913). Rubber coated fabric. J. T. Szék, 36, Rue de la Victoire, Brussels.
20,656 (1913). Breathing apparatus. R. H. Davis, 187, Westminster Bridge Road, London.
20,722 (1913). Rubber inlaid floor coverings. E. A. Beldam and W. R. Beldam (trading as R. Beldam), 1A, New London street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 13, 1915.]

20,753 (1913). Rubber and metal plate for boots. D. J. Wilcock, 308, Ashton New Road, Beswick, Manchester.
20,763 (1913). Tobacco pipe with vulcanite trap chamber. M. Bilton, 28, Kingswood avenue, West Kilburn, London.
*20,913 (1913). Splints. E. D. Brant, Canton, Ohio, U. S. A.
21,001 (1913). Calendering or mixing india rubber, etc. C. H. Gray, India Rubber Works, Silvertown, Essex.
21,060 (1913). Tourniquet comprising a pad of vulcanite. J. M. Carvell, 31, Avonmore Road, West Kensington, London; W. G. Chapman, The Greenway, Uxbridge, and J. J. Scaplehorn, 99, Third avenue, Queen's Park, London, W.

21,098 (1913). Respirator comprising a face mask with pneumatic rim. J. F. Scott, Caxton Cottage, and H. Davenport, Fairmount—both in Cannock, Staffordshire.

21,122 (1913). Tire cover of rubber with strips of cane or like fibrous elastic material extending obliquely from edge to edge. A. Anderson, Garden Road, Dunstable, Bedfordshire.

21,146 (1913). Vehicle window comprising rubber weather strip. M. Rey, 52, Rue de Passy, Paris, and J. de Wyckoff, 64, Victoria street, Westminster.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 20, 1915.]

10,487 (1913). Vulcanite saliva chamber for tobacco pipe, etc. G. N. Travers, 32, Charing Cross, Whitehall, London.

21,494 (1913). Athletic shoe with sole composed of fabric impregnated with balata, gutta percha, rubber or caoutchouc. I. Frankenburg & Sons, S. Frankenburg and F. H. Betteridge, Greengate Rubber Works, Salford, Lancashire.

21,654 (1913). Air tubes for wheel tire. F. Rich, High street, Crawley, Sussex.

21,675 (1913). Spring wheel with rubber ring and like cushion. J. Reuse and C. Reuse, 28, Quai au Charbon, Hal, Belgium.

21,771 (1913). India rubber. F. Ripeau, 10, Rue Rodier, Paris.

21,886 (1913). Dampener comprising two rubber covered rollers, in ironing apparatus. J. B. Russell and T. Wardrop, 11, Pritchard street, Charles street, Manchester.

21,909 (1913). Wheel tire. R. Wapshare, Westward Ho, Bangalore, Southern India.

21,986 (1913). Painting golf balls. B. Creswick, 22, Lansdowne Road, Erdington, Birmingham.

22,008 (1913). Cutting machine for rubber, etc. J. Rushmer, 344, Durnsford Road, Wimbledon Park, and H. Skelton, 175, Great Dover street, Southwark—both in London.

22,034 (1913). Pressure gage, the surface of which is formed of a rubber sheet. J. E. Graham, Fritwell Lodge, Banbury, Oxfordshire.

22,065 (1913). Waterproof fabrics for pneumatic tires, balloon envelopes, etc. L. Liais, 164, Rue de la Pompe, Paris.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 27, 1915.]

22,079 (1913). Rubber packing to secure wind screens to frames. J. W. Riding, "Willoughby," Dartmouth Road, Chorltoncum-Hardy, Manchester, and H. Grice, Hope Works, Sherborne street, Birmingham.

*22,112 (1913). Improvements in solid rubber tires. W. H. Fahrney, 38 South Dearborn street, Chicago, Ill., U. S. A.

22,137 (1913). Caoutchouc substances. F. E. Matthews and E. H. Strange—both of 50, City Road, London.

22,152 (1913). Rubber heel lifts. Soc. Francaise du Cuir Armé (Soc. Anon), 118, Rue de Vaugirard, Paris.

22,302 (1913). Coagulating rubber. F. W. Manson, 36, New Broad street, London.

22,349 (1913). Wheel tire. R. Wapshare, Westward Ho, Bangalore, Southern India.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

473,025 (June 4, 1914). Improvements in retreading pneumatic tires. F. W. Farr.

473,085 (September 6, 1913). A heel made of leather and rubber. Société Française du Cuir Armé.

473,275 (June 10, 1914). Improved elastic tire for vehicle wheels. E. F. Krell.

473,298 (June 11). Improvements to elastic wheels. J. W. Clifton.

473,303 (September 16, 1913). Puncture-proof protector for pneumatic tires. R. Labitte.

473,370 (June 12, 1914). Elastic wheel. Société R. F. P., Patent Wheels Proprietary, Limited.

473,417 (June 13). Improvement in vehicle wheels. C. O. Vantreau.

473,422 (June 13). New product for the manufacture of pneumatic and solid tires, shoes, soles, heels, etc. C. Pacchetti.

473,462 (March 2). Machine for setting and fixing rivets in tires and tire shoes and for similar purposes. The Dunlop Rubber Co., Limited.

473,483 (May 13). Elastic wheel suspension with a compressed air chamber between the spindles of the wheels and the body of the vehicle. A. D. Tandarjian and R. Capitchi.

473,538 (September 29, 1913). Air tube for pneumatic tires, and process for its manufacture and repair. Société Foucher & Cie.

473,540 (September 29). Pneumatic tire for heavy vehicles. R. Lance.

473,546 (June 16, 1914). Improvements in pneumatic tire coverings and tire shoes. M. C. Overman.

473,582 (May 20). Improvements in pneumatic tire air tubes. J. W. Bladgett.

GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

282,051 (January 13, 1914). Machine for placing a new tread on worn pneumatic tires for motor vehicle. Franz Kühne, Alaunstrasse, 13, Dresden.

282,052 (November 29). Tread for pneumatic tires. Oscar Mussinan, New York, U. S. A.; represented by Paul Müller, patent lawyer, Berlin S. W. 11.

281,989 (April 10, 1913). Belt lacing machine. Wilhelm Grupe and Hermann von der Heide, of Hameln, Klütstrasse, 36.

282,128 (July 12). Fluoric acid retainer. Doctor Heinrich Traun & Sons, formerly The Hamburg Rubber Comb Co., Hamburg.

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF RUBBER AND MANUFACTURES OF.

ARTICLES.	December, 1914. Quantity.	December, 1914. Value.	Twelve Months Ending December, 1914. Quantity.	Twelve Months Ending December, 1914. Value.
India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured—				
Balata .....*pounds..free*	200,002	$74,712	2,015,158	$880,214
Guayule gum	742,169	215,904	2,275,540	789,560
Gutta jelutong	1,192,567	50,787	18,663,898	856,976
Gutta percha	46,461	9,564	1,923,138	337,128
India rubber 11,583,797		5,138,953	143,065,161	70,472,704
India rubber scrap or refuse, fit only for remanufacture.	559,613	28,975	19,118,966	1,356,750
Total unmanufactured.	.....	$5,518,895	.....	$74,693,332
Manufactures of—				
Gutta percha .....*dutiable*	.....	$2,928	.....	$25,403
India rubber ..... "	.....	79,627	.....	1,389,959
Total manufactures of	.....	$82,555	.....	$1,415,362
Substitutes, elasticon and similar .....*dutiable*	.....	$1,323	.....	$62,995

IMPORTS OF CRUDE RUBBER BY COUNTRIES.

From:				
Belgium .....*pounds*	.....	.....	9,018,596	$5,028,504
France	70,864	$24,115	2,178,111	923,396
Germany	.....	.....	4,631,589	2,336,218
Portugal	702,969	207,267	1,928,175	573,580
United Kingdom	243,889	127,459	50,944,518	29,048,758
Central American States and British Honduras	12,092	4,333	442,160	205,185
Mexico	154,811	75,502	1,404,659	563,655
Brazil	6,341,650	2,882,395	44,686,093	17,822,396
Other South America.....	190,861	82,874	2,984,119	1,206,493
East Indies	3,724,801	1,675,564	22,989,691	11,758,517
Other countries	141,860	59,444	1,857,450	1,006,002
Total 11,583,797		$5,138,953	143,065,161	$70,472,704

EXPORTS OF AMERICAN RUBBER GOODS.

India rubber, manufactures of:				
Scrap and old.....*pounds*	114,986	$12,916	4,186,687	$408,978
Reclaimed	538,877	68,776	6,250,491	872,398
Belting, hose and packing...	.....	103,666	.....	2,098,506
Boots and shoes—				
Boots .....*pairs*	52,401	113,667	262,295	616,602
Shoes	472,592	750,326	1,675,856	1,402,503
Tires—				
For automobiles	.....	300,896	.....	3,315,116
All other	.....	32,592	.....	452,882
All other manufactures of...	.....	226,406	.....	3,016,098
Total	.....	$1,609,245	.....	$12,183,083

EXPORTS OF AUTOMOBILE TIRES BY COUNTRIES.

India rubber, manufactures of:				
Tires for automobiles—				
Belgium	.....	.....	.....	$301
Germany	.....	.....	.....	81,917
England	.....	$182,852	.....	1,458,777
Canada	.....	14,526	.....	866,999
Mexico	.....	6,341	.....	76,581
Philippine Islands	.....	16,366	.....	156,235
Other countries	.....	80,811	.....	674,306
Total	.....	$300,896	.....	$3,315,116

EXPORTS OF FOREIGN MERCHANDISE.

India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured—				
Balata .....*pounds..free*	147,051	$46,583	577,447	$248,910
Guayule gum	.....	.....	2,250	1,058
Gutta percha	.....	.....	11,163	5,653
India rubber	628,248	306,836	5,865,016	3,244,346
India rubber scrap or refuse, fit only for remanufacture.	.....	.....	324	8
Total unmanufactured.	.....	$353,419	.....	$3,499,975
Manufactures of—				
India rubber .....*dutiable*	.....	$1,200	.....	$6,102
Substitutes, elasticon and similar	.....	$1,200	.....	$6,102

TELEPHONING THROUGH THE NECK.

By use of a recent adaptation of the telephone it is now possible for a man doing rescue work in a mine filled with poisonous gases or smoke to employ the mouth solely for breathing—by the aid of an oxygen helmet or other breathing apparatus—and yet communicate with those above by means of the telephone. The transmitter is fastened against the throat and the play of the vocal organs enables one really to talk through his neck and communicate without difficulty with those on the other end of the wire.

Official India Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1914.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER, BY COUNTRIES.

From—	Pounds.	Value.
Europe:		
Belgium	11,005,246	$6,481,901
France	2,629,287	1,124,629
Germany	7,052,767	3,595,369
Italy	3,887	1,589
Netherlands	2,016,440	1,134,060
Portugal	556,560	177,687
United Kingdom—		
England	48,279,629	31,152,311
Scotland	45	25
Total	71,543,861	$43,667,571
North America:		
British Honduras	9,902	$4,635
Canada	159,868	117,936
Central American States—		
Costa Rica	58,534	28,733
Guatemala	34,235	16,426
Honduras	37,607	19,271
Nicaragua	307,427	171,325
Panama	110,561	53,723
Salvador	6,640	3,641
Mexico	641,029	333,422
Total	1,365,803	$749,112
South America:		
Brazil	40,641,305	$16,319,048
Colombia	382,205	175,870
Ecuador	214,583	75,941
Dutch Guiana	17	12
Peru	1,016,566	427,002
Venezuela	232,051	128,063
Total	42,486,727	$17,125,936
Asia:		
East Indies—		
British—		
British India	7,236	$3,360
Straits Settlements	9,035,503	5,122,318
Other British	7,091,146	4,263,594
Dutch	463,220	286,437
Total	16,597,105	$9,675,709
Oceania:		
Philippine Islands	2,246	$1,523
Total	2,246	$1,523
Total, 1913-14	131,995,742	$71,219,851
Total, 1912-13	113,384,359	90,170,316
Total, 1911-12	110,210,173	93,013,255
Total, 1910-11	72,046,260	76,244,603
Total, 1909-10	101,044,681	101,078,825
Total, 1908-09	88,359,895	61,709,723
Total, 1907-08	62,233,160	36,613,185
Total, 1906-07	76,963,838	58,919,981
Total, 1905-06	57,844,343	45,114,450

IMPORTS OF MANUFACTURES OF INDIA RUBBER, BY COUNTRIES.

[+ indicates increase; — indicates decrease, compared with the preceding year.]

From—	Value.
Europe:	
Austria-Hungary	$46,064+
Belgium	153,395+
Denmark	4—
France	138,308—
Germany	669,491+
Italy	6,128+
Netherlands	335—
Norway	7—
Russia in Europe	149,826+
Spain	140+
Sweden	18—
Switzerland	375—
Turkey in Europe	48+
United Kingdom—	
England	299,612—
Scotland	15,128+
Ireland	229+
Total	$1,479,308
North America:	
Bermuda	$9+
Canada	36,595+
Mexico	100+
British West Indies	25+
Cuba	10+
Total	$36,739
Asia:	
China	$8+
Japan	1,335—
Turkey in Asia	359+
Total	$1,702
Oceania:	
British—Australia and Tasmania	$40+
Total	$40
Total, 1913-14	$1,517,789
Total, 1912-13	1,217,236
Total, 1911-12	874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,262,783
Total, 1905-06	1,992,413

RE-EXPORTS OF IMPORTED INDIA RUBBER.

To—	Pounds.	Value.
Belgium	12,139	$6,203
France	131,016	90,048
Germany	201,757	96,045
Spain	2,548	1,274
United Kingdom—		
England	141,229	83,745
Scotland	72,247	50,889
Canada	3,179,489	2,064,712
Brazil	1,143	834
Japan	6,181	4,400
Total 1913-14	3,747,749	$2,398,150
Total, 1912-13	5,272,387	4,476,379
Total, 1911-12	5,610,951	4,890,905
Total, 1910-11	5,267,588	5,439,282
Total, 1909-10	6,492,947	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208
Total, 1906-07	4,215,350	3,593,912

RE-EXPORTS OF MANUFACTURES OF INDIA RUBBER.

To—	Value.
Austria-Hungary	$100
Belgium	625
France	579
Germany	1,985
Netherlands	1,700
United Kingdom—England	78
Canada	2,298
Mexico	188
West Indies—Cuba	85
Total, 1913-14	$7,638
Total, 1912-13	7,973
Total, 1911-12	6,681
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA, BY COUNTRIES.

From—	Pounds.	Value.
Europe:		
France	16,276	$5,607
Germany	174,227	107,008
United Kingdom—		
England	63,208	13,182
Scotland	224	436
Total	253,935	$126,233
North America:		
Canada	5,074	$1,304
Honduras	2,732	861
Total	7,806	$2,165
South America:		
Venezuela	212	$150
Total	212	$150
Asia:		
Aden	60	$10
East Indies—		
Straits Settlements	1,550,131	191,850
Dutch	33,965	3,159
Total	1,584,156	$195,019
Total, 1913-14	1,846,109	$323,567
Total, 1912-13	480,853	167,313
Total, 1911-12	1,204,406	225,797
Total, 1910-11	1,648,921	390,548
Total, 1909-10	784,501	167,873
Total, 1908-09	255,559	82,136
Total, 1907-08	188,610	100,305
Total, 1906-07	546,890	201,339
Total, 1905-06	500,770	188,161
Total, 1904-05	665,217	210,188
Total, 1903-04	424,617	174,953
Total, 1902-03	316,290	222,400
Total, 1901-02	525,767	252,329
Total, 1900-01	280,560	130,957
Total, 1899-00	427,678	178,616
Total, 1898-99	518,939	167,577
Total, 1897-98	636,477	159,381
Total, 1896-97	1,117,665	100,187
Total, 1895-96	3,843,854	178,513
Total, 1894-95	1,326,794	122,261
Total, 1893-94	498,763	84,340
Total, 1892-93	582,378	155,428
Total, 1891-92	308,239	114,874
Total, 1890-91	960,835	164,524

IMPORTS OF MANUFACTURES OF GUTTA PERCHA, BY COUNTRIES.

From—	Value.
Europe:	
Austria-Hungary	$484
Belgium	7
Denmark	5
France	824
Germany	27,627
Russia in Europe	2,464
United Kingdom—	
England	4,837
Scotland	3,460
Total	$39,708
North America:	
Canada	$2,311
Mexico	4
Total	$2,315
Total, 1913-14	$42,023
Total, 1912-13	77,300
Total, 1911-12	41,098
Total, 1910-11	61,283
Total, 1909-10	80,567
Total, 1908-09	71,819
Total, 1907-08	93,545

RE-EXPORTS OF GUTTA PERCHA.

To—	Pounds.	Value.
Germany	330	$195
Netherlands	6,946	1,090
Canada	7,373	3,970
Total, 1913-14	14,649	$5,255
Total, 1912-13	22,352	2,665
Total, 1911-12	1,011	945
Total, 1910-11	62,391	19,235
Total, 1909-10	74,137	13,886
Total, 1908-09	9,370	3,730
Total, 1907-08	.....	.....
Total, 1906-07	5,000	700

GUTTA JELUTONG.

IMPORTS OF GUTTA JELUTONG (PONTIANAK).

From—	Pounds.	Value.
Europe:		
Netherlands	43,942	$2,351
United Kingdom—England	124,228	5,479
Total	168,170	$7,830

Asia:		
East Indies—		
British—		
Straits Settlements....	24,626,085	$1,143,075
Dutch	132,316	4,497
Total	24,758,401	$1,147,572
Total, 1913-14.....	24,926,571	$1,155,402
Total, 1912-13.....	45,345,338	2,174,441
Total, 1911-12.....	48,795,268	2,255,050
Total, 1910-11.....	51,420,872	2,872,633
Total, 1909-10.....	52,392,444	2,419,223
Total, 1908-09.....	24,826,296	852,372
Total, 1907-08.....	22,803,303	1,039,776
Total, 1906-07.....	28,437,660	1,085,098
Total, 1905-06.....	21,390,116	733,074
Total, 1904-05.....	19,104,911	641,319
Total, 1903-04.....	14,887,416	430,231
Total, 1902-03.....	13,984,817	345,431
Total, 1901-02.....	16,850,821	501,418
Total, 1900-01.....	9,371,087	248,838
Total, 1899-00.....	8,701,753	237,214
Total, 1898-99.....	6,473,882	166,419

RE-EXPORTS OF GUTTA JELUTONG (PONTIANAK).

To—	Pounds.	Value.
Germany	32,000	$2,000
Total, 1913-14.....	32,000	$2,000
Total, 1912-13.....	3,000	163
Total, 1911-12.....	118,486	6,079
Total, 1910-11.....	.....	.....
Total, 1909-10.....	2,139	112

BALATA.

IMPORTS OF BALATA.

From—	Pounds.	Value.
Europe:		
United Kingdom—England.	13,751	$7,176
Total	13,751	$7,176
North America:		
Canada	6,985	$3,289
Cent. Amer. Sts.—Panama.	236,602	110,281
British West Indies—		
Barbados	3,987	2,000
Trinidad and Tobago....	58,185	24,555
Total	305,759	$140,125
South America:		
British Guiana	104,765	$58,284
Dutch Guiana	609,992	375,747
Venezuela	498,757	211,794
Total	1,213,514	$645,825
Total, 1913-14.....	1,533,024	$793,126
Total, 1912-13.....	1,318,598	766,772
Total, 1911-12.....	1,517,066	984,012
Total, 1910-11.....	878,305	624,702
Total, 1909-10.....	399,003	196,878
Total, 1908-09.....	1,157,018	522,872
Total, 1907-08.....	584,582	276,756
Total, 1906-07.....	799,029	305,041
Total, 1905-06.....	374,220	152,689

RE-EXPORTS OF BALATA.

To—	Pounds.	Value.
Belgium	6,929	$4,002
Germany	64,296	28,089
United Kingdom—		
England	104,125	66,936
Scotland	48,633	28,112
Total, 1913-14.....	223,983	$127,139
Total, 1912-13.....	118,334	77,963
Total, 1911-12.....	62,529	38,423
Total, 1910-11.....	264,589	230,575
Total, 1909-10.....	.....	42,750
Total, 1908-09.....	.....	223,907
Total, 1907-08.....	.....	18,741
Total, 1906-07.....	.....	12,659

GUAYULE.

IMPORTS OF GUAYULE GUM.

From—	Pounds.	Value.
Europe:		
Germany	35,789	$10,557
Total	35,789	$10,557
North America:		
Mexico	1,440,015	$596,519
Total	1,440,015	$596,519
Total, 1913-14.....	1,475,804	$607,076
Total, 1912-13.....	10,218,191	4,345,088
Total, 1911-12.....	14,238,625	6,463,787
Total, 1910-11.....	19,749,522	10,443,157

*Included in India Rubber prior to 1911.

RE-EXPORTS OF GUAYULE GUM.

To—	Pounds.	Value.
Germany	54,149	$21,320
United Kingdom—England.	2,250	1,058
Total, 1913-14.....	56,399	$22,378
Total, 1912-13.....	83,769	54,669
Total, 1911-12.....	197,948	98,517
Total, 1910-11.....	340,405	175,995

(Not reported until 1910-11.)

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER.

From—	Value.
Europe:	
France	$45,704
Germany	2,682
United Kingdom—	
England	38,123
Scotland	1,131
Total	$87,640
North America:	
Canada	$2
Total	$2
Total, 1913-14.....	$87,642
Total, 1912-13.....	97,452
Total, 1911-12.....	87,328
Total, 1910-11.....	115,601
Total, 1909-10.....	114,516
Total, 1908-09.....	60,625
Total, 1907-08.....	27,000

SCRAP RUBBER.

QUANTITY AND VALUE OF IMPORTS, BY COUNTRIES.

From—	Pounds.	Value.
Europe:		
Austria-Hungary	32,716	$2,128
Belgium	732,386	64,757
Denmark	478,386	36,769
Finland*	134,400	11,480
France	3,237,821	282,960
Germany	1,942,003	138,758
Greece	8,963	625
Italy	35,402	2,751
Netherlands	708,420	42,347
Norway	393,785	28,983
Roumania	32,658	2,420
Russia in Europe.....	5,018,555	453,522
Spain	32,693	3,064
Sweden	580,510	48,935
Switzerland	22,178	2,013
Turkey in Europe.....	378,107	29,087
United Kingdom—		
England	6,074,053	474,840
Scotland	2,688	596
Total	19,845,724	$1,626,035
North America:		
Bermuda	2,663	$160
Canada	5,188,446	371,665
Central American Sts.—		
Honduras	1,595	363
Panama	55,742	2,384
Mexico	241,879	19,347
Newfoundl'd and Labrador	54,184	4,194
West Indies, British—		
Jamaica	9,915	703
Trin. and Tobago.....	1,120	65
Other British	4,681	109
Cuba	184,480	12,426
Santo Domingo	567	57
Total	5,745,272	$411,473
South America:		
Colombia	1,126	125
Guiana—British	6,685	403
Venezuela	1,244	80
Total	9,055	$608
Asia:		
China	36,799	$2,034
Hongkong	22,400	1,109
Japan	1,680	122
Russia in Asia.....	214,380	16,147
Turkey in Asia.....	21,403	1,549
Total	296,662	$20,961
Oceania:		
British—		
Australia and Tasm....	17,966	$550
New Zealand	1,774	89
Philippine Islands	33,727	2,902
Total	53,467	$3,541
Africa:		
British Africa—South	2,240	$146
French Africa	5,841	434
Total	8,081	$580
Total, 1913-14.....	25,958,261	$2,063,198
Total, 1912-13.....	43,385,456	3,709,238
Total, 1911-12.....	26,293,192	2,095,605
Total, 1910-11.....	26,948,000	2,334,870
Total, 1909-10.....	37,364,671	2,998,697
Total, 1908-09.....	20,497,695	1,543,267
Total, 1907-08.....	16,331,035	1,496,822
Total, 1906-07.....	29,335,193	2,608,987
Total, 1905-06.....	24,756,486	1,721,678
Total, 1904-05.....	15,575,214	953,439
Total, 1903-04.....	20,270,970	1,164,785
Total, 1902-03.....	24,659,394	1,516,137
Total, 1901-02.....	22,894,900	1,437,690
Total, 1900-01.....	15,235,236	988,316
Total, 1899-00.....	19,093,547	1,249,231
Total, 1898-99.....	10,513,604	462,044
Total, 1897-98.....	9,488,327	339,374
Total, 1896-97.....	3,653,945	113,722
Total, 1895-96.....	3,874,677	123,068
Total, 1894-95.....	2,032,563	63,112
Total, 1893-94.....	1,774,008	55,803
Total, 1892-93.....	910,543	25,633
Total, 1891-92.....	1,841,786	66,775

*Included in "Russia in Europe" prior to 1911.

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

To—	Pounds.	Value.
Austria-Hungary	77,073	$15,374
Belgium	82,433	12,923
Denmark	4,034	1,100
France	888,386	95,567
Germany	514,720	98,485
Italy	78,267	5,696
Netherlands	249,163	35,108
Norway	10,815	2,220
Russia in Europe.....	20,658	5,152
Sweden	60,856	9,403
United Kingdom—		
England	3,126,182	206,623
Scotland	22,165	3,219
Canada	1,032,429	105,883
Japan	40,491	1,534
Total, 1913-14.....	6,207,672	$598,287
Total, 1912-13.....	7,269,465	880,442
Total, 1911-12.....	7,336,984	780,188
Total, 1910-11.....	7,049,729	723,664
Total, 1909-10.....	6,143,610	578,944
Total, 1908-09.....	4,071,795	402,897
Total, 1907-08.....	4,255,789	449,727
Total, 1906-07.....	4,756,621	548,695
Total, 1905-06.....	*a*	339,507
Total, 1904-05.....	*a*	204,945

(*a*) Not officially reported.

RE-EXPORTS OF SCRAP RUBBER.

To—	Pounds.	Value.
Canada	24,295	$2,450
Total, 1913-14.....	24,295	$2,450
Total, 1912-13.....	87,930	10,723
Total, 1911-12.....	302,105	28,196
Total, 1910-11.....	401,231	43,338
Total, 1909-10.....	61,395	5,373
Total, 1908-09.....	38,506	2,093
Total, 1907-08.....	21,713	2,943
Total, 1906-07.....	105,463	9,444

RECLAIMED RUBBER.

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

To—	Pounds.	Value.
Belgium	69,344	$12,442
France	378,503	45,737
Germany	282,860	51,972
Italy	14,089	2,520
Russia in Europe.....	44,805	6.052
Sweden	47,207	8,200
United Kingdom—		
England	723,080	128,233
Scotland	70,839	11,701
Canada	3,880,556	555,121
Japan	72,427	12,440
Australia and Tasmania....	150	22
Total, 1913-14.....	5,583,860	$834,440
Total, 1912-13.....	5,413,247	932,904
Total, 1911-12.....	5,397,806	875,501
Total, 1910-11.....	4,994,527	781,650
Total, 1909-10.....	3,622,556	535,795
Total, 1908-09.....	3,196,551	414,861
Total, 1907-08.....	2,947,974	418,738
Total, 1906-07.....	4,550,788	665,109
Total, 1905-06.....	4,084,696	511.843
Total, 1904-05.....	*a*	522,902

(*a*) Not officially reported.

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1914.

EXPORTED TO—	Belting, Packing and Hose.	Boots.		Shoes.		Tires		Other Goods.	Total
		Pairs.	Value.	Pairs.	Value.	For Automobiles. Value.	All Other. Value.	Value.	Value.
EUROPE:									
Austria Hungary	$3,247	.....	$205	6,373	$3,881	$1,009	$254	$6,566	$15,162
Azores and Madeira Islands	35	.....	.....	302	219	138	8	390	790
Belgium	3,782	177	672	31,780	15,278	15,730	634	34,462	70,558
Bulgaria	776	.....	.....	174	92	170	.....	.....	1,038
Denmark	9,494	444	1,090	36,023	19,110	11,414	4,253	5,626	50,987
Finland	1,979	.....	.....	.....	.....	4,585	1,944	1,122	9,630
France	62,319	296	1,088	43,181	22,579	5,448	15,284	74,259	180,977
Germany	65,283	769	2,646	141,892	74,341	132,181	202	382,930	657,583
Gibraltar	.....	.....	.....	132	120	.....	.....	.....	120
Greece	.....	.....	.....	.....	.....	271	132	297	700
Italy	4,427	575	1,602	13,445	7,459	915	8,820	19,496	42,719
Netherlands	4,640	2	4	4,176	1,764	2,286	7,016	30,412	46,122
Norway	7,756	.....	.....	40,084	21,521	5,649	4,668	4,116	43,710
Portugal	524	30	114	198	145	157	90	482	1,512
Roumania	686	.....	.....	6,844	4,330	211	.....	.....	5,227
Russia in Europe	7,095	.....	.....	340	210	1,168	522	2,692	11,687
Spain	2,230	204	810	7,471	3,991	1,595	2,212	2,390	13,228
Sweden	2,302	444	815	2,274	1,648	77,537	45,077	3,613	130,992
Switzerland	453	72	311	24,260	12,969	.....	.....	970	14,703
Turkey in Europe	.....	.....	.....	56,498	29,325	.....	.....	52	29,377
United Kingdom—									
England	334,295	18,824	44,615	539,626	238,011	1,503,440	96,071	1,015,960	3,232,392
Scotland	11,774	.....	.....	54,582	26,746	336	.....	3,721	42,577
Ireland	176	.....	.....	2,329	640	.....	.....	.....	816
Total, Europe	$523,273	21,897	$53,972	1,011,894	$484,379	$1,764,240	$187,187	$1,589,556	$4,602,607
NORTH AMERICA:									
Bermuda	$436	.....	.....	331	$208	$267	$1,065	$4,430	$6,406
British Honduras	1,564	19	$52	234	147	727	42	839	3,371
Canada	306,707	28,949	92,781	70,660	46,711	961,937	22,429	926,813	2,357,378
Central American States—									
Costa Rica	9,489	.....	.....	110	59	6,877	1,998	5,638	24,061
Guatemala	8,376	.....	.....	60	36	5,547	827	3,660	18,446
Honduras	8,332	.....	.....	105	57	1,392	145	2,390	12,316
Nicaragua	4,989	13	55	33	42	180	61	9,331	14,658
Panama	140,805	4,152	7,120	9,268	5,866	18,362	11,156	38,132	221,441
Salvador	10,472	.....	.....	66	32	2,084	116	18,443	31,147
Mexico	269,483	77	308	1,998	965	111,948	23,534	91,732	497,970
Miquelon, Langley, etc	154	439	1,340	909	480	.....	.....	49	2,023
Newfoundland and Labrador	5,577	8,441	20,849	46,265	24,542	1,668	937	10,973	64,546
West Indies—									
British—									
Barbados	278	9	33	.....	.....	4,351	711	1,151	6,524
Jamaica	7,280	10	36	1,558	1,039	55,361	586	7,580	71,882
Trinidad and Tobago	7,258	.....	.....	3	3	17,023	1,745	6,326	32,355
Other British	2,383	.....	.....	415	362	2,472	667	3,805	9,689
Cuba	127,817	595	1,524	2,527	1,229	55,236	95,567	133,360	414,733
Danish	634	.....	.....	386	286	1,739	299	407	3,365
Dutch	311	.....	.....	46	30	746	35	950	2,072
French	.....	2	10	.....	.....	1,045	961	318	2,334
Haiti	1,266	.....	.....	366	208	2,336	259	1,456	5,525
Santo Domingo	10,330	6	13	612	597	2,902	4,988	8,301	27,131
Total, North America	$923,941	42,712	$124,121	135,952	$82,899	$1,254,200	$168,128	$1,276,084	$3,829,373
SOUTH AMERICA:									
Argentina	$37,824	140	$389	6,659	$2,939	$21,920	$7,553	$49,895	$120,520
Bolivia	454	100	308	.....	.....	1,526	54	976	3,318
Brazil	25,084	1,298	2,771	32,803	19,925	11,839	5,931	53,722	119,272
Chile	71,113	930	4,643	9,957	5,676	10,639	19,805	27,383	139,259
Colombia	12,172	11	48	2,501	1,440	18,925	4,724	8,025	45,334
Ecuador	37,096	3	11	985	590	3,313	2,726	4,553	48,289
Guiana—									
British	980	2	10	5,508	2,267	3,420	921	1,342	8,940
Dutch	315	.....	.....	.....	.....	544	.....	343	1,202
French	.....	.....	.....	.....	.....	.....	.....	7	7
Paraguay	98	.....	.....	.....	.....	.....	.....	142	240
Peru	26,919	412	2,092	138	67	4,835	2,589	7,650	44,152
Uruguay	5,476	12	34	6,293	3,789	17,987	16,222	19,053	62,561
Venezuela	8,591	.....	.....	937	558	20,439	1,418	11,371	42,377
Total, South America	$226,122	2,908	$10,306	65,781	$37,251	$115,387	$61,943	$184,462	$635,471
ASIA:									
Arden	.....	....	.....	.....	.....	55	166	.....	221
China	$21,312	48	$135	2,069	1,462	28,326	16,108	6,995	74,338
Chosen	5,108	.....	.....	228	156	2,578	.....	244	8,086
East Indies—									
British—									
British India	9,869	86	158	696	581	3,555	23	4,467	18,653
Straits Settlements	2,893	.....	.....	.....	.....	7,174	124	340	10,531
Other British	143	1	4	.....	.....	30	291	454	922
Dutch	399	.....	.....	.....	.....	2,677	3,599	1,760	8,435
Hongkong	4,217	78	209	454	357	1,057	1,722	4,183	11,745
Japan	106,551	6,872	13,500	24,132	12,086	18,629	16,208	60,283	227,257
Russia in Asia	353	19	69	.....	.....	.....	.....	4	426
Siam	25	.....	.....	.....	.....	92	.....	26	143
Turkey in Asia	756	.....	.....	7,780	3,772	.....	.....	.....	4,528
Total, Asia	$151,626	7,104	$14,075	35,359	$18,414	$64,173	$38,241	$78,756	$365,285
OCEANIA:									
British—									
Australia and Tasmania	$182,927	10,219	$26,543	346,410	$183,634	$94,321	$2,400	$107,026	$596,851
New Zealand	35,424	10,492	33,643	14,177	9,331	35,695	4,397	49,066	167,556
Other British	.....	24	77	4,172	3,434	432	.....	249	4,192
French	1,978	132	721	7,879	7,370	7,278	1,271	715	19,333
German	43	.....	.....	.....	.....	396	115	3	557
Philippine Islands	50,944	2,742	7,219	8,899	5,375	141,205	93,801	123,814	422,358
Total, Oceania	$271,316	23,609	$68,203	381,537	$209,144	$279,327	$101,984	$280,873	$1,210,847

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1914.—Continued.

EXPORTED TO—	Belting, Packing and Hose.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Tires. For Automobiles. Value.	Tires. All Other. Value.	Other Goods. Value.	Total Value.
AFRICA:									
British Africa—									
West	$1,013	.....	.....	36	$29	.....	$115	$370	$1,527
South	223,476	3,131	$8,529	3,335	2,041	$27,090	5,153	42,429	308,718
East	.....	.....	.....	.....	.....	642	35	.....	677
Canary Islands	47	.....	.....	.....	.....	.....	.....	419	466
Egypt	8,773	.....	.....	192	81	208	377	87	9,526
French Africa	2,582	.....	.....	40	27	.....	107	60	2,776
German Africa	.....	.....	.....	.....	.....	.....	102	.....	102
Liberia	.....	.....	.....	42	24	.....	.....	.....	24
Morocco	20	.....	.....	.....	.....	.....	.....	.....	20
Portuguese Africa	40,698	.....	.....	.....	.....	.....	.....	376	41,074
Total, Africa	$276,609	3,131	$8,529	3,645	$2,202	$27,940	$5,889	$43,741	$364,910
Grand Total, 1913-14	$2,372,887	101,361	$279,206	1,634,258	$834,289	$3,505,267	$563,372	$3,453,472	$11,008,493
Grand Total, 1912-13	2,605,551	109,528	$274,330	2,231,467	1,163,953	3,943,220	611,458	3,913,036	12,511,548
		Boots and Shoes.[2] Pairs.	Boots and Shoes.[2] Value.						
Grand Total, 1911-12	2,315,484	.....	2,545,076	1,502,890	.....	2,657,809	546,833	4,144,273	11,167,289
Grand Total, 1910-11	2,163,416	.....	3,984,332	2,219,430	.....	2,085,107	592,470	3,886,825	10,947,248
Grand Total, 1909-10	1,960,825	.....	3,791,084	1,984,739	.....	.....	.....	5,115,331	9,060,895
Grand Total, 1908-09	1,498,445	.....	2,396,435	1,292,673	.....	.....	.....	3,823,956	6,615,074
Grand Total, 1907-08	1,347,775	.....	3,080,253	1,614,290	.....	.....	.....	3,743,040	6,705,105
Grand Total, 1906-07	1,253,369	.....	2,310,420	1,231,898	.....	.....	.....	3,729,643	6,214,910
Grand Total, 1905-06	1,221,159	.....	2,693,690	1,505,082	.....	.....	.....	2,966,144	5,692,385
Grand Total, 1904-05	994,100	.....	2,390,539	1,214,342	.....	.....	.....	2,572,375	4,780,817
Grand Total, 1903-04	880,010	.....	2,310,420	1,231,898	.....	.....	.....	3,729,643	6,214,910
Grand Total, 1902-03	819,985	.....	2,307,401	1,056,491	.....	.....	.....	2,299,875	4,176,351
Grand Total, 1901-02	634,146	.....	2,594,708	1,046,315	.....	.....	.....	1,781,941	3,462,402
Grand Total, 1900-01	565,726	.....	1,459,100	724,015	.....	.....	.....	1,727,527	3,017,268

[1] Included in "Russia in Europe" prior to 1911. [2] Stated separately after 1912. Tires were not specifically reported before 1910-11.

SUMMARY.

	1911-12. Pounds.	1911-12. Value.	1912-13. Pounds.	1912-13. Value.	1913-14. Pounds.	1913-14. Value.
IMPORTS OF FOREIGN MERCHANDISE—						
India rubber, etc., and substitutes for, and manufactures of:						
Unmanufactured—						
Balata ..... *pounds..free*	1,517,066	$984,012	1,318,598	$766,772	1,533,024	$793,126
Guayule gum	14,238,625	6,463,787	10,218,191	4,345,088	1,475,804	607,076
Gutta jelutong	48,795,268	2,255,050	45,345,338	2,174,441	24,926,571	1,155,402
Gutta percha	1,204,406	225,797	480,853	167,313	1,846,109	323,567
India rubber	110,210,173	93,013,255	113,384,359	90,170,316	131,995,742	71,219,851
India rubber scrap or refuse, fit only for remanufacture	26,293,192	2,095,605	43,385,456	3,709,238	25,958,261	2,063,198
Total unmanufactured imports	202,258,730	$105,037,506	214,132,795	$101,333,168	187,735,511	$76,162,220
Manufactures of—						
Gutta percha ..... *dutiable*	.....	$41,098	.....	$77,300	.....	$42,023
India rubber	.....	874,736	.....	1,217,236	.....	1,517,789
Substitutes, elasticon and similar	.....	87,328	.....	97,452	.....	87,642
Total manufactured imports	.....	$1,003,162	.....	$1,391,988	.....	$1,647,454
RE-EXPORTS OF FOREIGN MERCHANDISE—						
India rubber, etc., and substitutes for, and manufactures of:						
Unmanufactured—						
Balata ..... *free*	62,529	$38,423	118,334	$77,963	223,983	$127,139
Guayule gum	197,948	98,517	83,769	54,669	56,399	22,378
Gutta jelutong	118,486	6,079	3,000	163	32,330	2,195
Gutta percha	1,011	945	22,352	2,665	14,319	5,060
India rubber	5,610,951	4,890,905	5,272,387	4,476,379	3,747,749	2,398,150
India rubber scrap or refuse, fit only for remanufacture	302,105	28,196	87,930	10,723	24,316	2,450
Total unmanufactured re-exports	6,293,030	$5,063,065	5,587,772	$4,622,562	4,099,096	$2,557,372
Manufacturers of—						
Gutta percha ..... *dutiable*	.....	$65	.....	$27,906	.....	.....
India rubber	.....	6,681	.....	7,973	.....	$7,638
Substitutes, elasticon and similar	.....	231	.....	559	.....	.....
Total manufactures re-exported	.....	$6,977	.....	$36,438	.....	$7,638
EXPORTS OF DOMESTIC MANUFACTURES—						
India rubber, manufactures of:						
Scrap and old ..... *pounds*	7,336,984	$780,188	7,269,465	$880,442	6,207,678	$598,287
Reclaimed	5,397,806	875,501	5,413,247	932,904	5,583,860	834,440
Belting, hose and packing	.....	2,315,424	.....	2,605,551	.....	2,372,887
Boots and shoes—						
Boots ..... *pairs*	2,545,076	1,502,890	109,528	274,330	101,361	279,206
Shoes			2,231,467	1,163,953	1,634,258	834,289
Tires—						
For automobiles	.....	2,657,809	.....	3,943,220	.....	3,505,267
All other	.....	546,833	.....	611,458	.....	563,372
All other manufactures of	.....	4,144,273	.....	3,913,036	.....	3,453,472
Total domestic manufactures exported	.....	$12,822,918	.....	$14,324,894	.....	$12,441,220

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

THE chemical market has been more or less affected by the difficulties in shipping from foreign countries during war times. The list shows advanced prices, with supplies sufficient for the present. Zincs are in fair demand and foreign grades are arriving in limited quantities; the prices, however, have not changed. The same can be said of the lead compounds. Dry colors are firmer this month, with some grades affected by the embargo shipments from Germany. There is very little change, however, in the local market. There is good demand for certain grades of domestic barytes. Foreign grades arrive occasionally and there is no scarcity of stock. Lithopone is normal and manufacturers are disposing of their output without difficulty. Foreign grades are being quoted and arrivals reported. The scarcity of chalk is having a marked effect on the whiting market, which cannot improve until sufficient quantity of the raw material is available to meet normal requirements. Prices for the various vegetable and mineral oils used in the trade are nominal and the demand has been quiet throughout the month. Aniline and corn oil, however, have advanced.

In general it can be said that irregular prices have characterized the local market during the past month. Actual business has not been unusually active, although certain compounding ingredients have met with a good demand.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.

February 27, 1915.

Acetic acid, 28 per cent	lb.	$ 0.01¼@	$ 0.02
Acetic acid, glacial	lb.	.07¾@	.08¼
Acetone	lb.	.18 @	.20
Alba whiting	ton	8.00 @	13.00
Aluminum flake	lb.	.01⅜@	
Aniline oil	lb.	.75 @	.80
Antimony, crimson, sulphuret of	lb.	.40 @	.50
Antimony, golden, sulphuret of	lb.	.35 @	.45
Arsenic sulphide	lb.	.12 @	
Asbestine	ton	16.00 @	18.00
Barytes, domestic	ton	17.00 @	18.00
Barytes, foreign	ton	19.00 @	20.00
Bayberry wax	lb.	.25 @	.27
Beeswax, white	lb.	.45 @	.55
Benzol, 90 per cent	gal.	.30 @	.35
Black hypo	lb.	.25 @	
Blanc fixe	lb.	.03⅞@	.04
Cadmium, yellow	lb.	1.25 @	1.50
Carbon bi-sulphide	lb.	.06½@	.07½
Carbon gas	lb.	.04 @	.06
Carbon tetra-chloride, drums	lb.	.12 @	.13
Ceresin wax, white	lb.	.10 @	.25
Chalk, light precipitated	lb.	.04½@	.05½
China clay, domestic	ton	8.00 @	9.00
China clay, imported	ton	14.00 @	16.00
Chrome, yellow	lb.	.10¾@	.12
Chrome, green	lb.	.22 @	.30
Coal tar naphtha	gal.	.28 @	
Corn oil, crude	100 lbs.	6.25 @	6.30
Fossil flour	ton	35.00 @	
Fossil flour, bolted	ton	60.00 @	
Glycerine, C. P., bulk	lb.	.21½@	.21¾
Graphite	lb.	.08 @	.12
Green oxide of chromium	lb.	.30 @	.35
Iron oxide	lb.	.02½@	.08½
Infusorial earth	ton	30.00 @	35.00
Ivory, black	lb.	.08 @	.12
Lampblack	lb.	.03¾@	.07
Lead, sublimed white	lb.	.07½@	
Lead, white (basic carbonate)	lb.	.05 @	.05¼
Lead, white (basic sulphate)	lb.	.04¾@	.05
Linseed oil, carload	gal.	.55 @	
Litharge	lb.	.05 @	
Litharge, English	lb.	.09½@	.09¾
Lithopone, American	lb.	.03¾@	.04½
Lithopone, Imported	lb.	.04¼@	
Magnesia, carbonate	lb.	.04¾@	.05½
Magnesia, calcined, powder	ton	40.00 @	45.00
Naphtha, V. M. & P., deodorized	gal.	.09 @	.11
Naphtha, 73@76 deg	gal.	.24 @	
Naphtha, 86 deg	gal.	.26 @	
Orange mineral, domestic	lb.	.07¼@	.08¼
Ozokerite, refined white	lb.	.30 @	.40
Paraffine wax, domestic 120 m. p	lb.	.04½@	.04¾
Pine tar, retort	bbl.	6.50 @	
Prussian blue	lb.	.46 @	.48
Pumice stone, powder	lb.	.01½@	.02
Rape seed oil, blown	gal.	.78 @	.80
Red lead, domestic	lb.	.05½@	
Red lead, English	lb.	.08½@	.09
Red oxide, domestic	lb.	.05½@	.07
Rosin oil	gal.	.25 @	.55
Shellac, fine orange	lb.	.17 @	.19
Soapstone, powdered	ton	10.00 @	12.00
Sulphur chloride, in drums	lb.	.06½@	08
Sulphur, flowers	cwt	2.20 @	2.60
Sulphuric acid, c. p	lb.	.05½@	.07½
Talc, American	ton	15.00 @	20.00
Talc, French	ton	15.00 @	25.00
Turpentine, spirits	gal.	.44½@	.45
Ultramarine blue	lb.	.03½@	.13
Vermilion, Chinese	lb.	.90 @	1.00
Whiting, commercial	cwt.	.45 @	.50
Whiting, Paris white, American	cwt.	.70 @	.75
Whiting, English cliffstone	cwt.	.75 @	1.10
Zinc oxide, American process	lb.	.05⅜@	
Zinc oxide, French process, red seal	lb.	.07 @	
Zinc oxide, French process, green seal	lb.	.07½@	
Zinc oxide, French process, white seal	lb.	.08 @	

THE SCRAP RUBBER MARKET.

THERE was very little business in the scrap rubber market during the first week of the month. Prices on shoes and tires were unchanged from the week before. The settlement of the rubber embargo question is no doubt the cause of the present dullness and prevailing prices. During the second week auto tires developed weakness, selling to the mills at 4½ cents a pound. Shoes remained nominal, with 7¾ cents as the best price that could be obtained from the consumer. The market in a general way reflected the lack of activity on the part of the reclaimers. The result is an easier market and a poor demand for shoes. In some quarters they are bought for 7⅝ cents, but most of the large dealers are holding out for 7¾ cents. Auto tires are still quoted at 4½ cents, and inner tubes are easier, at 22½ to 23 cents to the mills. There is no marked change reported in other grades. The trade has been expecting to hear that Canada's embargo against shipments of scrap rubber has been lifted, but nothing definite has so far developed.

RUBBER SCRAP PRICES PAID BY CONSUMERS FOR CARLOAD LOTS.

New York, February 27, 1915.

	Per Pound.	
Boots and shoes	cents	7½@ 7¾
Trimmed arctics		6 @ 6¼
Auto tires		4½@ 4¾
Solid tires		4½@ 4¾
No. 1 inner tubes		24 @26
No. 2 inner tubes		11½@12½
Red tubes		13 @13½
Bicycle tires		3 @ 3¼
Irony tires		1¼@ 2¼
No. 1 auto peelings		8¼@ 9¼
Mixed auto peelings		7 @ 7½
No. 1 soft white rubber		11 @12
White wringer rubber		9 @
No. 1 red scrap		10 @11
Mixed red scrap		7¼@ 7½
Mixed black scrap		2¼@
Rubber car springs		3¼@
Horse shoe pads		3 @ 3¼
Matting and packing		½@ ¾
Garden hose		⅝@ ¾
Air brake hose		3¼@ 3¾
Cotton fire hose		2 @ 2¼

Review of the Crude Rubber Market.

NEW YORK.

THE month opened with good inquiries for all grades, particularly Plantation, but spot stocks were small and actual business consequently restricted. First latex crepe sold at 62@64 cents and Upriver fine was steady at 60@61 cents. During the week the demand from manufacturers was light. Plantation rubber was arriving regularly and it was reported that ample supplies from London could be counted on. Brazil arrivals were also regular. These prospects broke prices at the end of the week to 59 @60 cents for First latex crepe, and 58@59 cents for Upriver fine.

The market developed a firm tone in Plantation with slight price fluctuations during the second week. Para sorts were irregular and pressure to sell was noticed. First latex was firm at 61 cents and Upriver fine unsettled at 58 cents. Very little change was noted during the third week. The market continued firm and prices steady. Rubber was arriving, but subject to considerable delay on account of the new guarantee system. Spot prices were steady, First latex crepe at 58@59, and Upriver fine at 58@60 cents.

The month is closing with Plantation firm. First latex crepe for spot advanced to 63 cents. Smoked ribbed sheets were marked up to 65@66, and Upriver fine closed firm at 58½ cents. The demand is nominal for spot, and future delivery shipments from London are irregular and uncertain. The new arrangements for handling the guarantees are working in a satisfactory manner. Some Plantation rubber arrived on the "Sebek" from London late in February and the "Cheltonian" and "St. Stephen," both from the same port, are on the high seas. It is not known how much rubber will arrive by these ships as no information is given out concerning cargo from London. The "Justin" from Maranham, Ceara, Parnahyba and Para arrived with 540 tons February 23. The "Rio de Janeiro" from Para was due February 27 with 405 tons. The "Denis" from Manaos and Para is due March 1 with 1,280 tons. The "Atahualpa," sailing from Manaos and Para, is due to arrive March 10.

THE LONDON MARKET.

As the obstacles placed by the government in the way of exporting rubber to America had been removed, by the first of the month shipments began to go forward as rapidly as docking facilities would permit. The amount of rubber held in London for American account, February 1, was 3,500 tons. During the first week there was little change in the market, which had been fairly active and steady. The prospect of American trade resulted in firm prices for spot Plantation. Standard crepe sold at 2*s.* 2¼*d.*; smoked sheet at 2*s.* 4*d.*, and hard fine at 2*s.* 6*d.* The market continued firm and steady, with Plantation prices marked up from 1 to 1½*d.* per pound. Shippers were unable to secure cargo space, and instances of short shipments were frequent. During the last week Standard crepe sold at 2*s.* 3¼*d.* to 2*s.* 4*d.*, with Smoked sheet at 2*s.* 4½*d.* for prompt shipment. It is reported that the sailings of several steamers plying between London and America will be discontinued.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and February 27, the current date:

PARA.	March 1,'14.	Feb. 1,'15.	Feb. 27,'15.
Upriver, fine, new	75 @76	60 @61	58½@
Upriver, fine, old	.....	.....	60 @
Islands, fine, new	70 @71	53 @	50 @
Islands, fine, old	.....	.....	.....
Upriver, coarse, new	46 @47	44 @45	45 @46
Upriver, coarse, old	.....	.....	.....
Islands, coarse, new	32 @	28 @29	28 @
Cameta	36 @	32 @33	32½@33
Caucho, upper	47½@48	45 @46	46 @48
Caucho, lower	.....	40 @41	43 @44
PLANTATION HEVEA.			
		Spot.	
Smoked sheet ribbed	62 @63	65 @66	65 @66
		Prompt Shpt.	
		60 @61	62½@63
		Spot.	
First latex crepe	61 @62	60 @61	62 @63
		Prompt Shpt.	
		56 @57	60½@61
Fine sheets and biscuits unsmoked	61 @	Prompt Shpt.	59 @60
CENTRALS.			
Corinto	.....	42 @43	44 @45
Esmeralda, sausage	44 @45	42 @43	44 @45
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	41 @	41 @	43 @44
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	42 @43	.....	.....
Mexican, slab	.....	.....	.....
Manicoba, scrap	38 @	.....	.....
Mangabeira, sheet	.....	37½@40	37½@40
Guayule	.....	29 @30	.....
Balata, sheet	.....	53 @	56 @57
Balata, block	.....	42 @	45 @46
AFRICAN.			
Lopori, ball, prime	52 @53	58 @	.....
Lopori, strip, prime	.....	58 @	.....
Aruwimi	.....	.....	.....
Upper Congo, ball red	.....	.....	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	.....	.....	.....
Massai, red	49 @50	.....	51½@52½
Soudan Niggers	48 @50	.....	.....
Cameroon, ball	31 @32	43 @	.....
Benguela	.....	.....	.....
Madagascar, pinky	.....	.....	.....
Accra, flake	22 @23	.....	23 @24
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	6 @ 6½	7½@ 8	7½@ 8

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows: "There has been no material change during February from the general situation prevailing in January as regards commercal paper, the demand continuing good from both city and out-of-town banks at 4@4½ per cent. for the best rubber names and 5@5½ per cent. for those not so well known, these rates averaging about ½ per cent. lower than in January."

NEW YORK PRICES FOR JANUARY (NEW RUBBER).

	1915.	1914.	1913.
Upriver, fine	$0.61@$0.75	$0.73@$0.77	$1.02@$1.09
Upriver, coarse	.45@ .58	.44@ .47	.78@ .84
Islands, fine	.53@ .70	.59@ .65	.97@ 1.01
Islands, coarse	.29@ .37	.27@ .31	.52@ .58
Cametá	.31@ .41	.35@ .37	.52@ .60

London and Liverpool.

GOW, WILSON & STANTON, LTD., report [January, 1915]:

	Imports.	Deliveries.	Stocks. 1915.	1914.	1913.
LONDON—					
Plantation ..... *tons*	6,146	5,407	6,643	3,866	2,722
Other kinds	88	157	731	765	731
Total	6,234	5,564	7,374	4,631	3,453
LIVERPOOL—					
Para	128	142	324	517	394
Other kinds	616	552	371	1,026	685
Total	744	694	695	1,543	1,079
Total London and Liverpool.	6,978	6,258	8,069	6,174	4,532

Singapore.

GUTHRIE & Co., LTD., report [January 12, 1915]:

Stronger advices having been received from London, the auction sale held today opened under more favorable auspices than for some weeks past and during the forenoon prices generally marked a decided improvement. In the afternoon bidding was not nearly so brisk and prices weakened considerably.

Ribbed Smoked Sheet sold up to $120, there being a particularly good inquiry for this grade. Fine Pale Crepe touched $118. The lower grades of Crepe again sold very well, but Browns dragged to some extent. Scrap rubbers were quiet.

Of 125 tons catalogued 90 tons changed hands. The following was the course of values:

	In Singapore. Picul*	Sterling equivalent per pound in London.
Sheet, fine smoked	$110@120	2/ 1/16 @2/3 5/16
Sheet, fair to good	90@108	1/ 9 1/16 @2/1
Sheet, unsmoked	84@ 93	1/ 7 7/16 @1/9 3/16
Crepe, fine pale	113@118	2/ 2 @2/3
Crepe, good pale	102@109	1/11 1/16 @2/1 1/16
Crepe, fine brown to palish	96@ 99	1/10 3/16 @1/11
Crepe, good brown	78@ 91	1/ 6 1/16 @1/9 3/16
Crepe, dark	64@ 87	1/ 3 1/16 @1/8 1/16
Crepe, barky	50@ 75	1/ 0 1/16 @1/6
Scrap, virgin	51@ 55	1/ 1 @1/1 1/16
Scrap, untreated	40@ 55	0/10 15/16 @1/1 1/16

*Picul=133⅓ pounds.

Quoted in S. S. dollars = 2/4 [56 cents].

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

JANUARY 28.—By the steamer *Stephen* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	256,500	35,800	29,900	12,200=	334,400
General Rubber Co	182,200	22,400	27,800	1,000=	233,400
Meyer & Brown	161,600	48,800	15,700	6,300=	232,400
H. A. Astlett & Co	68,600	16,900	85,600	24,700=	195,800
Henderson & Korn	94,200	14,300	22,900	2,600=	134,000
Robinson & Co	69,300	.....	11,300	.....=	80,600
W. R. Grace & Co	61,300	4,400	10,800	.....=	76,500
Robert Badenhop	44,400	3,400	6,700	.....=	54,500
Crossman & Sielcken	400	.....	2,200	.....=	2,600
Thomsen & Co	100	300	1,500	400=	2,300
Davies, Turner & Co	.....	.....	76,800	117,100=	193,900
Total	938,600	146,300	291,200	164,300=	1,540,400

FEBRUARY 2.—By the steamer *Sao Paulo* from Pará.

Arnold & Zeiss	32,800	3,200	92,400	.....=	128,400
Meyer & Brown	33,500	5,400	94,400	55,000=	188,300
G. Amsinck & Co	61,000	500	14,000	12,400=	87,900
Aldens' Successors, Ltd	50,700	3,900	60,800	.....=	115,400
Henderson & Korn	135,900	20,100	4,100	.....=	160,100
H. A. Astlett & Co	27,900	12,900	12,200	5,900=	58,900
Hagemeyer & Brunn	9,600	.....	.....	1,200=	10,800
Rumsey & Greutert Co., Inc.	24,200	2,500	1,900	.....=	28,600
Total	375,600	48,500	279,800	74,500=	778,400

FEBRUARY 5.—By the steamer *Gregory* from Pará and Manáos:

Henderson & Korn	43,900	4,700	2,300	200=	51,100
Rumsey & Greutert Co., Inc.	50,400	.....	.....	.....=	50,400
Meyer & Brown	18,100	3,400	3,800	.....=	25,300
H. A. Astlett & Co	3,000	1,000	9,400	.....=	13,400
Arnold & Zeiss	.....	.....	10,600	.....=	10,600
Robinson & Co	.....	.....	.....	2,000=	2,000
Total	115,400	9,100	26,100	2,200=	152,800

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Robinson & Co	11,900	1,300	6,200	8,200=	27,600

FEBRUARY 8.—By the steamer *Acre* from Para:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	11,100	400	8,600	.....=	20,100
Arnold & Zeiss	11,400	.....	15,800	11,300=	38,500
Aldens' Successors, Ltd	.....	.....	19,100	50,400=	69,500
Henderson & Korn	.....	.....	.....	4,700=	4,700
H. A. Astlett & Co	28,900	7,300	25,400	58,300=	119,900
G. Amsinck & Co	16,200	400	200	17,000=	33,800
Total	67,600	8,100	69,100	141,700=	286,500

FEBRUARY 17.—By the steamer *Dunstan* from Para:

Meyer & Brown	28,600	400	100,200	.....=	129,200
Arnold & Zeiss	32,800	5,600	35,100	23,100=	96,600
Hagemeyer & Brunn	1,100	1,400	23,700	37,400=	63,600
Neuss, Hesslein & Co	31,700	.....	8,300	5,200=	45,200
Aldens' Successors, Ltd	.....	.....	7,300	.....=	7,300
G. Amsinck & Co	6,500	.....	.....	10,800=	17,300
Rumsey & Greutert Co., Inc.	11,100	.....	.....	.....=	11,100
Henderson & Korn	12,500	.....	8,600	.....=	21,100
H. A. Astlett & Co	16,900	5,600	67,800	.....=	90,300
Davies, Turner & Co	.....	.....	.....	110,200=	110,200
Total	141,200	13,000	251,000	186,700=	591,900

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.	
JANUARY 18.—By the *Creole*=New Orleans:		
E. Steiger & Co	1,000	
JANUARY 23.—By the *San Jacinto*=Galveston:		
Various	*35,000	
JANUARY 25.—By the *Tennyson*=Bahia:		
Rossbach Bros. & Co	90,000	
Adolph Hirsch & Co	7,500	97,500
JANUARY 25.—By the *Antilles*=New Orleans:		
E. Steiger & Co	1,000	
JANUARY 25.—By the *Tivives*=Colombia:		
Eggers & Heinlein	500	
Rosenthal & Sons	700	1,200
JANUARY 26.—By the *Nueces*=Galveston:		
Various	*80,000	
JANUARY 29.—By the *Zacapa*=Colombia:		
A. Held	2,500	
Various	1,000	3,500
JANUARY 30.—By the *Alliance*=Colon:		
G. Amsinck & Co	65,000	
W. R. Grace & Co	18,500	83,500
JANUARY 30.—By the *Antilla*=Mexico:		
General Export & Commission Co.	3,500	
Murphy & Fultz	1,000	
J. A. Medina & Co	700	
H. Marquardt & Co	300	
E. Steiger & Co	200	5,700
JANUARY 30.—By the *Alliance*=Colon:		
G. Amsinck & Co	88,000	
W. R. Grace & Co	18,500	
J. S. Sembrada & Co	14,600	
H. Wolff & Co	700	
Lawrence Johnson & Co	33,800	
Mecke & Co	1,900	
Pablo, Calvet & Co	4,000	
A. M. Capen's Sons	1,200	
Otto Gerdau & Co	7,900	
Andean Trading Co	2,100	
Pan American Sales Co	1,600	
Various	600	174,900
FEBRUARY 1.—By the *El Cid*=Galveston:		
Various	*115,000	
FEBRUARY 2.—By the *Calamares*=Colon:		
G. Amsinck & Co	22,000	
W. R. Grace & Co	11,000	
M. L. Collantes	2,000	35,000
FEBRUARY 5.—By the *Carrillo*=Cartagena:		
G. Amsinck & Co	1,000	
J. S. Sembrada & Co	500	1,500
FEBRUARY 5.—By the *Colon*=Colon:		
G. Amsinck & Co	2,700	
American Trading Co	4,000	
A. D. Straus & Co	300	
Meyer Hecht	100	
W. R. Grace & Co	300	
Isaac Brandon & Bros	1,100	
Fidanque Bros. & Sons	1,000	
Goutard & Co	700	
Pottberg, Ebeling & Co	200	10,400
FEBRUARY 8.—By the *Arapahoe*=Galveston:		
Various	*40,000	
FEBRUARY 8.—By the *Creole*=New Orleans:		
E. Steiger & Co	*40,000	
FEBRUARY 11.—By the *Colorado*=Galveston:		
Various	*40,000	
FEBRUARY 13.—By the *Yumuri*=Mexico:		
E. Steiger & Co	1,000	
FEBRUARY 15.—By the *Advance*=Colon:		
G. Amsinck & Co	22,100	
Lawrence Johnson & Co	27,700	
Laidlaw & Co	20,000	
Piza, Nephews & Co	2,500	
W. R. Grace & Co	39,000	
Harburger & Stack	1,200	
Mecke & Co	1,000	
Hispano-American Sales Co., Inc.	1,500	
J. S. Sembrada & Co	400	
Isaac Brandon Bros	300	
Various	2,700	118,400
FEBRUARY 15.—By *El Valle*=Galveston:		
Various	*60,000	
FEBRUARY 15.—By *El Mundo*=Galveston:		
Various	*190,000	
FEBRUARY 16.—By the *Morro Castle*=Mexico:		
E. Steiger & Co	2,000	
Lawrence Johnson & Co	3,500	
J. F. Dunbar	1,000	6,500
FEBRUARY 16.—By the *Metapan*=Colon:		
United Fruit Co	1,500	
G. W. Delgado	300	1,800
FEBRUARY 16.—By the *Antilles*=New Orleans:		
E. Steiger & Co		5,500
FEBRUARY 23.—By the *Pastores*=Port Limon:		
G. Amsinck & Co	500	
A. Held	500	1,000
FEBRUARY 23.—By the *Tivives*=Cortez:		
A. Rosenthal & Sons		1,200
FEBRUARY 23.—By the *Panama*=Colon:		
G. Amsinck & Co	6,500	
Neuss, Hesslein & Co	3,000	
Fidanque Bros. & Sons	1,500	
Camacho, Roldau & Van Sickel	1,400	
J. S. Sembrada & Co	500	
A. M. Capen's Sons	4,300	
Pablo Calvet & Co	3,000	
H. Wolff & Co	1,200	21,400

AFRICAN.

	Pounds.	
JANUARY 23.—By the *Possidon*=Lisbon:		
Ed. Maurer	165,000	
Robert Badenhop	65,000	
W. H. Stiles	22,500	
Various	80,000	332,500
JANUARY 27.—By the *Chicago*=Havre:		
Various		50,000
JANUARY 27.—By the *Strathnairn*=Lisbon:		
Meyer & Brown	22,500	
Arnold & Zeiss	45,000	
Ed. Maurer	80,000	
W. Stiles	11,200	
Rosenstern & Co.	2,500	
Various	135,000	296,200
FEBRUARY 1.—By the *Alaunia*=Liverpool:		
Various		40,000
FEBRUARY 1.—By the *Franconia*=Liverpool:		
Arnold & Zeiss		35,000
FEBRUARY 8.—By the *Moldegaard*=Lisbon:		
Various		61,500
FEBRUARY 11.—By the *Niagara*=Havre:		
Henderson & Korn		11,200

EAST INDIAN.

	Pounds.	
JANUARY 23.—By the *Lusitania*=Liverpool:		
General Rubber Co.	*215,000	
The B. F. Goodrich Co.	*210,000	*425,000
JANUARY 25.—By the *Minnewaska*=London:		
Johnstone, Whitworth & Co.		*20,000
FEBRUARY 1.—By the *Alaunia*=Liverpool:		
The B. F. Goodrich Co.	*415,000	
General Rubber Co.	*345,000	*760,000
FEBRUARY 1.—By the *Franconia*=Liverpool:		
General Rubber Co.	*300,000	
The B. F. Goodrich Co.	*112,000	
Arnold & Zeiss	*15,000	*427,000
FEBRUARY 4.—By the *Glenstrae*=Liverpool:		
The B. F. Goodrich Co.	*60,000	
Hood Rubber Co.	*190,000	
General Rubber Co.	*45,000	*295,000
FEBRUARY 5.—By the *Adriatic*=Liverpool:		
General Rubber Co.		*45,000
FEBRUARY 8.—By the *Menominee*=London:		
Meyer & Brown	*155,000	
Ed. Maurer	*215,000	
W. Stiles	*20,000	
Henderson & Korn	*182,500	
Johnstone, Whitworth & Co.	*300,000	
Arnold & Zeiss	*550,000	
Robinson & Co.	*67,000	
General Rubber Co.	*725,000	
L. Littlejohn & Co.	*270,000	
Aldens' Successors, Ltd.	*260,000	
Charles T. Wilson & Co., Inc.	*165,000	
Rubber Trading Co.	*90,000	
Various	*77,500	*3,077,000
FEBRUARY 10.—By the *Orduna*=Liverpool:		
The B. F. Goodrich Co.	*67,500	
General Rubber Co.	*33,500	*101,000
FEBRUARY 13.—By the *Minneapolis*=London:		
Meyer & Brown	*70,000	
General Rubber Co.	*190,000	
The B. F. Goodrich Co.	*115,000	
Arnold & Zeiss	*425,000	
Charles T. Wilson & Co., Inc.	*90,000	
Robert Badenhop	*50,000	
Hood Rubber Co.	*50,000	
Aldens' Successors, Ltd.	*22,500	
Ed. Maurer	*245,000	
L. Littlejohn	*70,000	
Henderson & Korn	*100,000	
Adolph Hirsch & Co.	*25,000	
W. Stiles	*10,000	
Johnstone, Whitworth & Co.	*80,000	
Rubber & Guayule Agency, Inc.	*60,000	
Various	*150,000	*1,752,500
FEBRUARY 15.—By the *Megantic*=Liverpool:		
L. Littlejohn & Co.		*33,500
FEBRUARY 15.—By the *St. Louis*=Liverpool:		
General Rubber Co.		*33,500
FEBRUARY 15.—By the *Frankmount*=Liverpool:		
The B. F. Goodrich Co.	*190,000	
General Rubber Co.	*60,000	*250,000
FEBRUARY 17.—By the *Minnehaha*=London:		
Meyer & Brown	*22,500	
Johnstone, Whitworth & Co.	*22,500	
W. Stiles	*15,000	
Ed. Maurer	*57,500	
L. Littlejohn & Co.	*225,000	
Henderson & Korn	*45,000	
Arnold & Zeiss	*250,000	
Michelin Tire Co.	*45,000	
General Rubber Co.	*305,000	
Charles T. Wilson & Co., Inc.	*25,000	
Aldens' Successors, Ltd.	*620,000	
Various	*135,000	*1,767,500
FEBRUARY 23.—By the *Sebek*=London:		
The B. F. Goodrich Co.	*200,000	
General Rubber Co.	*156,000	
Robinson & Co.	*140,000	
Charles T. Wilson & Co., Inc.	*150,000	
Michelin Tire Co.	*56,000	
Aldens' Successors, Ltd.	*45,000	
Rubber Trading Co.	*22,500	
Robert Badenhop	*7,000	
Hood Rubber Co.	*1,100	
Various	*280,000	*1,057,600
FEBRUARY 23.—By the *Cymric*=Liverpool:		
General Rubber Co.		*7,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK, N. Y.—DECEMBER, 1915.

	Pounds.	Value.
Imports:		
India rubber	11,440,291	$5,069,394
Balata	200,002	74,712
Gutta percha	46,461	9,564
Gutta jelutong (Pontianak)	801,101	35,112
Total	12,487,855	$5,188,782
Exports:		
India rubber, manufactures of	.....	111,837
Rubber scrap, imported	333,830	15,958
Rubber scrap, exported	63,525	9,606

PORT OF SAN FRANCISCO, CAL.—JANUARY, 1915.

Imports:		
India rubber	1,660	750

PORT OF BOSTON, MASS.—JANUARY, 1915.

Imports:		
Gutta percha	56,461	5,334
Gutta jelutong (Pontianak)	610,262	29,643

PORT OF CHICAGO, ILL.—JANUARY, 1915.

Imports:		
India rubber (Canada)	17,094	804

PORT OF NIAGARA FALLS, N. Y.—JANUARY, 1915.

Exports:		
India rubber	76,327	41,484

PORT OF DETROIT, MICH.—JANUARY, 1915.

Exports:		
Rubber scrap, imported	190	11
Rubber scrap, exported	5,501	248
Rubber, reclaimed, exported	126,191	14,115

PORT OF NEW ORLEANS, LA.—DECEMBER, 1914.

Imports:		
India rubber	44,832	23,714

PORT OF NEW ORLEANS, LA.—JANUARY, 1915.

Imports:		
India rubber	53,483	24,763

PORT OF PHILADELPHIA, PA.—JANUARY, 1915.

Exports:		
Rubber scrap, imported	3,584	264
Rubber scrap, exported	6,393	945

PORT OF CLEVELAND, OHIO.—JANUARY, 1915.

Rubber scrap, returned	.....	68

EXPORTS OF INDIA RUBBER FROM PARA AND MANAOS IN 1914 AND FOR SEVENTEEN YEARS.

[The figures indicate weights in kilograms.]

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Berringer & Co.—Pará / Zarges, Ohliger & Co.—Manáos	2,802,146	469,039	1,613,368	1,245,833	6,130,386	3,170,004	463,749	440,651	1,502,634	5,577,038	11,707,424
General Rubber Co. of Brazil—Pará and Manáos	2,571,999	501,582	1,305,070	1,053,255	5,431,906	791,109	162,927	71,228	619,286	1,644,550	7,076,456
J. Marques—Pará	1,226,361	245,809	1,164,971	823,275	3,460,416	935,214	23,871	88,037	180,782	1,227,904	4,688,320
Pralow & Co.—Manáos	1,490,378	285,626	391,381	261,215	2,428,600	1,103,463	211,596	314,322	532,085	2,161,466	4,590,066
Suarez Hermanos & Co., Limited—Pará	409,700	7,417	64,241	114,223	595,581	632,282	.....	74,367	589,197	1,295,846	1,891,427
Pires Teixeira & Co.—Pará	239,408	34,700	657,689	90,595	1,022,392	298,082	454	8,001	.....	306,537	1,328,929
Adelbert H. Alden, Limited—Pará and Manáos	277,809	40,212	151,308	30,127	499,456	325,863	60,418	84,715	27,009	498,005	997,461
Seligmann & Co., G. Deffner & Co.—Pará and Manáos	169,567	1,170	28,462	215,599	414,798	263,095	.....	43,692	44,115	350,902	765,700
De Lagotellerie & Co.—Pará and Manáos	60,849	8,250	26,749	70,553	166,401	312,523	60,575	68,024	49,185	490,307	656,708
J. G. Araujo & Co.—Manáos	33,247	5,098	11,431	3,403	53,179	88,951	6,989	19,459	2,278	117,677	170,856
W. Peters & Co.—Manáos	.....	.....	.....	.....	.....	1,100	.....	3,265	530	4,895	4,895
Armazens Andresen—Manáos	.....	2,575	.....	.....	2,575	.....	.....	1,210	.....	1,210	3,785
Sundries	418,753	51,731	163,493	117,775	751,752	850,560	104,251	140,144	227,447	1,322,402	2,074,154
	9,700,217	1,653,209	5,578,163	4,025,853	20,957,442	8,772,246	1,094,830	1,357,115	3,774,548	14,998,739	35,956,181
From Itacoatiara—direct	58,844	3,592	24,595	9,000	96,031	42,994	5,014	27,443	22,146	97,597	193,628
From Iquitos—direct	213,433	20,961	43,159	355,072	632,625	255,992	15,155	77,304	589,287	937,738	1,570,363
Total, 1914	9,972,494	1,677,762	5,645,917	4,389,925	21,686,098	9,071,232	1,114,999	1,461,862	4,385,981	16,034,074	37,720,172
Total, 1913	7,223,363	1,354,794	5,324,881	3,198,077	17,101,115	11,749,008	1,591,241	2,456,162	6,338,207	22,114,618	39,215,733
Total, 1912	9,477,888	2,035,278	6,503,631	3,337,691	21,354,488	12,570,242	1,414,572	2,822,694	5,200,397	22,007,905	43,362,393
Total, 1911	7,686,680	1,571,375	5,173,230	1,669,596	16,100,881	11,230,371	1,503,869	2,504,439	4,519,039	19,757,718	35,858,599
Total, 1910	7,500,410	1,412,311	4,489,108	1,658,661	15,060,490	11,673,302	1,506,752	3,382,432	6,416,842	22,979,328	38,039,818
Total, 1909	9,439,722	1,767,310	5,784,170	2,655,778	19,646,980	9,832,613	1,372,221	2,950,626	5,649,763	19,805,223	39,452,203
Total, 1908	8,280,768	1,739,505	5,616,549	1,902,620	17,539,442	10,721,266	1,419,025	2,854,624	5,528,994	20,523,909	38,063,351
Total, 1907	8,012,592	1,863,775	5,149,312	1,580,657	16,606,336	10,783,787	1,358,264	3,190,982	5,574,783	20,907,816	37,514,152
Total, 1906	7,406,171	1,785,315	5,496,419	1,531,399	16,192,304	9,289,310	1,253,574	3,223,944	4,799,623	18,575,451	34,767,755
Total, 1905	7,173,463	1,518,444	4,921,222	1,647,216	15,260,345	10,052,634	1,291,703	2,498,516	4,363,690	18,556,543	33,916,888
Total, 1904	8,062,104	1,630,355	5,394,429	1,222,580	16,309,468	7,615,817	993,955	2,503,520	3,221,376	14,334,668	30,644,136
Total, 1903	7,248,065	1,621,827	5,029,646	1,133,857	15,033,395	9,156,872	1,167,956	2,659,748	3,076,971	16,061,547	31,094,942
Total, 1902	6,588,524	1,614,776	4,523,413	1,133,155	13,859,868	8,522,521	1,514,521	2,595,177	2,057,222	15,689,912	28,549,780
Total, 1901	8,027,727	1,926,505	4,271,456	1,325,290	15,550,978	7,939,010	1,556,358	2,605,553	2,638,599	14,739,520	30,290,498
Total, 1900	6,557,277	1,199,611	3,783,279	894,500	12,434,667	7,798,537	1,401,390	3,256,969	1,857,100	14,313,996	26,748,663
Total, 1899	7,583,405	1,319,349	4,023,710	951,854	13,878,318	6,410,647	1,030,459	2,527,013	1,583,572	11,551,691	25,430,009
Total, 1898	5,399,654	868,982	2,759,714	801,915	9,830,265	6,794,541	1,125,688	2,995,801	1,162,712	12,078,742	21,909,007

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EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to December 31, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

To—		1913.	1914.
Great Britain	*pounds*	15,046,548	21,444,077
United States		6,081,164	9,175,991
Belgium		3,908,074	2,984,009
Australia		453,993	751,920
Germany		364,982	1,037,415
Japan		300,659	284,506
Straits Settlements		148,440	50,980
Russia		101,116	105,212
Italy		44,784	1,772
Austria		31,434	.....
France		25,419	320,152
India		1,881	1,550
Holland		992	.....
Canada and Newfoundland		.....	77,530
Total		26,509,486	36,235,114

(Same period 1912, 14,159,091 pounds; same period 1911, 6,575,039.)

To arrive at the approximate quantity of Ceylon rubber exported for 1914 to date, deduct the quantity from the total exports. In previous years the exports of Ceylon rubber only were given.

The export figures of rubber for 1914 in the above table include the imports re-exported, viz., 3,731,016 pounds.

(From January 1 to January 11, 1914. Compiled by the Ceylon Chamber of Commerce.)

To—		1914.	1915.
Belgium	*pounds*	46,308	.....
Great Britain		4,636	20,850
France		.....	6,720
Total		50,944	27,570

(Same period 1913, 153,695; same period 1912, 112,871.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 31,536 pounds—6,336 pounds from the Straits and 25,200 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. Dec. 31.	Malacca. Dec. 31.	Penang. Nov. 30.	Port Swettenham. Dec. 31.	Total.
Great Britain. *pounds*	29,326,477	5,265,628	17,659,200	27,652,992	79,904,297
Continent	2,042,220	36,873	533,333	1,816,538	4,428,964
Japan	1,259,823	.....	.....	.....	1,259,823
Ceylon	297,245	.....	905,333	1,572,660	2,775,238
United States	10,732,448	15,878	911,501	244,209	11,904,036
Australia	175,964	.....	.....	.....	175,964
Total	43,834,177	5,318,379	20,009,367	31,286,399	100,448,322
Same period, 1913.	27,857,983	.....	12,925,467	28,877,774	69,661,224
Same period, 1912.	14,649,707	.....	7,575,764	20,254,269	42,479,740
Same period, 1911.	6,635,618	.....	4,057,932	12,109,788	22,803,338

Exports from Singapore from January 1 to January 11, 1915, are as follows:

To—		Singapore. Jan. 11, 915.
Great Britain	*pounds*	1,39 ,283
Continent		16 ,411
Japan		.. ...
Ceylon		1(100
United States		... ...
Australia		... ..
Total		1,580, 4
Same period, 1914		683, 9
Same period, 1913		1,177, 6
Same period, 1912		681,446

COMPARATIVE STATISTICS OF RUBBER EXPORTS FROM JAVA AND MADURA FOR THE FIRST TEN MONTHS OF 1913 AND 1914.

	Plantation Ficus.		Hevea.	
To—	1913.	1914.	1913.	1914.
Holland *pounds*	103,915	39,607	1,899,510	2,734,948
Great Britain	133,093	41,780	1,802,295	3,092,833
Belgium	....	....	500,115	549,083
Rest of Europe	6,316	711	19,514	86,634
United States	1,901	....	31,559	134,044
Singapore	1,839	....	32,430	192,190
Other countries	625	1,954	2,882	....
Total	247,689	84,052	4,288,305	6,789,732

	Ceara.		Castilloa.		Others.	
To—	1913.	1914.	1913.	1914.	1913.	1914.
Holland *pounds*	12,617	134,275	44,684	51,630	43,094	23,177
Great Britain	9,777	30,589	25,800	23,602	48,006	17,728
Germany	....	....	6,919	2,735	....	....
Rest of Europe	....	....	....	....	2,996	....
Singapore	....	260	631	....	....	....
Other countries	....	....	....	....	3,080	2,622
Total	22,394	165,124	78,034	77,967	97,176	43,527